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SOUND WAVES

INTERNATIONAL TELEPHONE JOURNAL

VOLUME XIII
No. 1.

DECEMBER
1906

Published Monthly by THE THOMAS H. WILSON CO., Logansport, Indiana

STANDARD
Underground Cable Co.
322 Rookery, Chicago
Pittsburgh, Philadelphia, Boston
New York, St. Louis, Oakland, Calif., Bacon Blk.

TELEPHONE CABLES
Hard Drawn Copper Wire, Bare and Weatherproof. Rubber Wires, All Styles

G. W. WILDER
ELECTRICAL AND TELEPHONE
ENGINEER
MONADNOCK BUILDING
CHICAGO

New York Ground Clamp
For connecting telephone ground wires to pipes and cables. Cheaper than a wrapped connection; as good as a soldered connection. Adopted by nearly all the Bell Tel. Co.'s and most of the larger Independent Tel. Co.'s Samples free on application. Write for list of other specialties.
YONKERS SPECIALTY CO.
YONKERS, N. Y., U. S. A.
Western Electric Co., Agents
H. C. Roberts Electric Supply Co., Phila., Pa.

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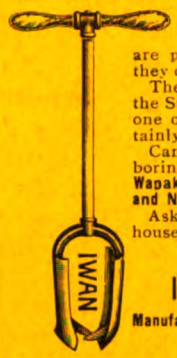

If you dig them with Spade and Spoon you are paying twice as much as they ought to cost you.
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Can also be used for diagonal boring for anchor holes for the **Wapak, Everstock, Miller, Holden and Nagel Anchors.**
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Manufacturers of Hardware Specialties
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TELEPHONE CABLE
PAPER

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is standard for switchboard and telephone soldered connections.
Carried in stock by many dealers and manufacturers. Write for prices.
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194 Michigan St., Chicago

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5, 6 and 7 Inch Stombaugh Guy Anchors have no Welds or holes for pins or rivets in the Rods
Stombaugh Guy Anchors BORE into the Ground
NO DIGGING
When in at a depth of five feet they are set. The Strain can be put on without fear of any "Back Give."
Write for Catalog, etc.
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206 N. 2nd St. ST. LOUIS
5, 6 and 7 Inch Styles Holds 12,500, 15,000 and 17,500 Lbs. Respectively.

INSULATING COMPOUND
Dielectric Cable Compound for Potheads, Terminals, Cable Splicing
IN 1 GALLON CANS
IN 5 GALLON CANS
IN 50 GALLON BARRELS
DIELECTRIC MFG. CO.
138 Liberty St., N. Y. Saint Louis

QUALITY FIRST!
GET SAMPLES AND PRICES
of

BEFORE BUYING
RUBBER COVERED WIRE AND CABLES
MANUFACTURED BY
INDIANA RUBBER AND INSULATED WIRE CO.
JONESBORO, IND.
QUALITY AND PRICE DECIDE

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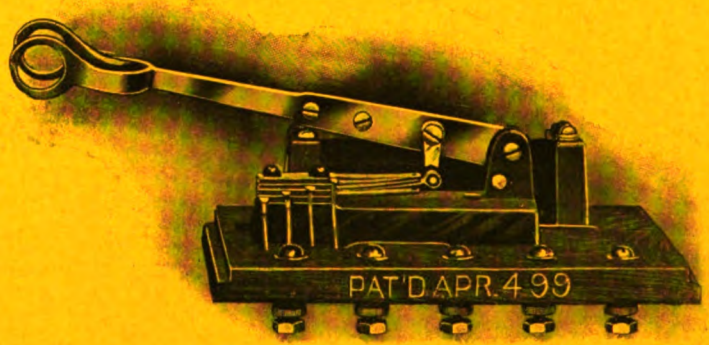
MONARCH

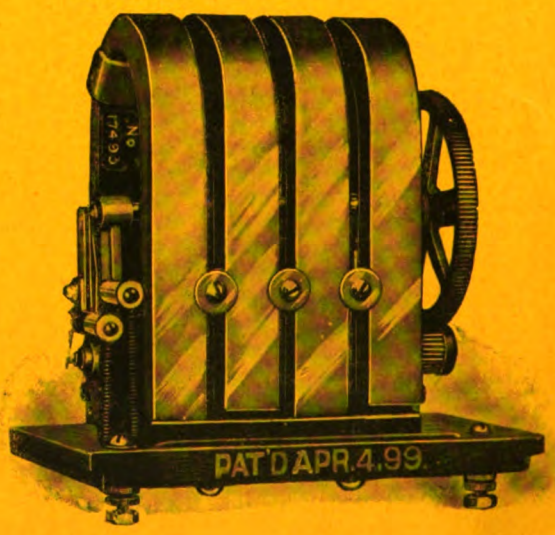
MONARCH METHODS



A burned out induction coil or damaged generator can be replaced in a Monarch Telephone in one-half the time required to replace the same parts in other instrument. An ordinary line-man can clear a great many cases of instrument trouble by slipping out one shelf and slipping in a new one. The old shelf can be taken back to the exchange and the damaged part exchanged or repaired where facilities are at hand. Our oldest customers are the most firm adherents to the Monarch Idea of assembly.

If you are not entirley familiar with this idea as well as other characteristics of Monarch Apparatus, write for our cata'ogue. It will interest you.

The idea of mounting the generator, induction coil and hook switch on removable shelves was first applied about five years ago. At that time some people said it was not practical to so mount the parts, but our experience has shown conclusively that it is not only practical, but very desirable. The mere fact that these parts can be removed without breaking any soldered connections and without affecting the permanent wiring is an advantage which everybody appreciates. This advantage leads to others.



Monarch Telephone Mfg. Co.

CHICAGO, U. S. A.

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SOUND WAVES

A Monthly Magazine Devoted to the Interests of Independent Telephony

Vol. XIII. **DECEMBER, 1906** **No. 1**

SOUND WAVES

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S. BERTELL & CO., 39 Maiden Lane, Covent Garden, London, Eng., British Representatives

NOTICE TO ADVERTISERS

Changes of Copy must be in this office not later than the 1st of each month We can not insure changes of copy being made or advertisements being with drawn after that date, as advertising forms begin going to press the 1st.

New Advertisements can be inserted if received by the 5th of each month but to insure proper classfication they should be in this office by the 1st.

To mail the paper promptly, it is necessary for us to adhere strictly to the above, and we will appreciate the co-operation of advertisers.

Subscriptions, Etc.—Address the Logansport Office. In sending personal checks for books or subscriptions, include 15 cents for exchange.

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EDITORIAL COMMENT

WHY WE SHOULD BE THANKFUL

No class of business men has greater cause for thankfulness than that engaged in the operation of telephone lines and the manufacture of telephone apparatus.

The year has been one of merited prosperity. The people have enjoyed better telephone service than ever before, and the managers who have shared in the general prosperity have spent millions of dollars in improving their exchanges and perfecting their lines.

The manufacturers have reaped a rich harvest. Orders have come to them from every section of the country and money has been easier than for several years past.

Providence has indeed been with the Independent telephone movement. The public has awakened to a knowledge of the fact that it cannot expect equitable treatment from the Bell monopoly, and that, on the other hand, the Independent companies are willing to supply telephone service at a fair rate.

The telephone is no longer a rich man's luxury. It is a business and social necessity, and any man, or corporation, unwilling to provide it at reasonable cost is an enemy of the people.

It seems wondrous strange that in this era of trust investigation the Bell Company and its auxiliary organizations have been permitted to escape the most rigid inquiry, because in every city now in its control it has abused the patience of its patrons and imposed extraordinary taxes upon them.

In many localities it has forced Independent operators, under one pretense and another, to enter into contracts for long-distance service, using any and every argument to accomplish its nefarious ends, from soft soap to a bludgeon.

Those who have watched the peculiar and heathen ways of the Bell monopoly know that it is, without doubt or question, the most conscienceless organization in the United States, compared to which the gigantic Standard Oil trust is a mere kindergarten of devious financial and industrial devices.

Fortunately the people of the United States and Canada, although unaided by the government, are beginning to see things as they really are, with the result that 1906 will be the banner year in the development and expansion of Independent telephony.

There have been but few failures in the Independent

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telephone field, a fact which proves that the people's companies have been organized on a safe and healthy basis.

Most of the companies have earned reasonable dividends and laid by a creditable sinking fund to provide for reconstruction and depreciation of their plants.

In short, the Independent telephone business which, in a single decade, has grown from nothing to an industry employing a capital of $300,000,000, is now, and always will be, as conservatively, shrewdly and benificently managed as any standard line of industrial endeavor.

Another pleasing circumstance connected with the Independent telephone field is that, with all the corruption in public office and commercial life, it has developed but few defaulters or law-breakers, and it is only reasonable to say that no great industry has so splendid a record of honesty.

And this high compliment can be applied to the manufacturing as well as to the operating branch of the business.

Take it all in all, the Independent telephone movement has set a new and most admirable standard of integrity in its dealings with stockholders as well as patrons; and that, more than the dollar and cent profits, should make the men engaged in its conduct and promotion truly thankful.

A HARD BLOW FOR THE BELL

The Illinois supreme court recently handed down an anti-trust and anti-monopoly decision which is of interest to every loyal and fair-play-loving citizen of the United States and of particular importance to Independent telephone men.

In 1901 Milo G. Kellogg, founder of the Kellogg Switchboard and Supply Company at Chicago, was prostrated by illness and shortly afterward went to California, leaving a power of attorney with one De Wolf, a relative and an officer of the Kellogg Company.

De Wolf, without notifying Mr. Kellogg of his intention, entered into an agreement for the sale of the latter's stock to the American Telephone and Telegraph Company, the parent company of the Bell organization in the United States and Canada, and other corporations identified with the Bell interests.

Mr. Kellogg was informed of the sale of his stock as soon as he had recovered sufficiently to bear the shock of the sad intelligence. He hastened to Chicago to take steps to nullify the sale of his property to parties to whose methods he had always been bitterly opposed.

In the meantime several minority stockholders, who were dissatisfied with the proceedings, had filed a suit against the American Telephone and Telegraph Company, the Western Electric Co., De Wolf and others, praying that the defendants be enjoined from voting the stock secured by them under such questionable circumstances.

Mr. Kellogg was also made a defendant in the case so as to enable him to file a cross bill and bring about a complete review of all the points at issue.

In the Cook county courts the petition for an injunction was refused, but the supreme court has now reversed the decision of the lower court and issued the injunction prayed for by the minority stockholders.

The court evidently was convinced that the American Telephone and Telegraph Company bought the Kellogg stock for the purpose of securing control of the switchboard manufacturing business, a proceeding radically antagonistic to public policy and the anti-trust laws of the state and nation.

In his cross bill Mr. Kellogg prayed that his stock be restored to him, either at the price paid for it by the purchasers or at a price to be fixed by the court. This important point was overlooked by the supreme court justices in their review of the case; consequently the question of restoring the stock to its rightful owner will have to be decided later.

Two facts are clearly proved, however. First, that today the Bell Company is in actual possession of the Kellogg Swithbcoard and Supply Company; and, second, that the Bell interests have been trying to secure a monopoly of the switchboard business.

Eminent lawyers are of the opinion that eventually Mr. Kellogg will again secure possession of the factory which he established; but in the interim the Kellogg Company is a Bell-controlled concern, unworthy of the support of Independent telephone operators.

It is probable that the shares now held by the American Telephone and Telegraph Company will be transferred to dummies; although, in view of the supreme court decision, there might be an element of danger in such a proceeding.

The Independent telephone man who hereafter buys goods from the Kellogg Company cannot plead ignorance as to the ownership of the concern. He must know that every dollar paid to it is a tribue to the Bell Company.

If the Independents are true to their principles the decision of the Illinois supreme court will be the hardest blow which the manufacturing end of the Bell monopoly has received for many years; for not until Mr. Kellogg and his former associates come again into their own should a Kellogg board or telephone be installed in any exchange managed by lovers of fair play and honest competition.

A LITTLE ADVERTISING TALK

Volumes are being written every month about advertising and the writing of advertisements.

Professional wiseacres would have us believe that preparing copy for newspapers, magazines or circulars is a "science," an "art" or some other high-sounding accomplishment.

Nothing of the kind.

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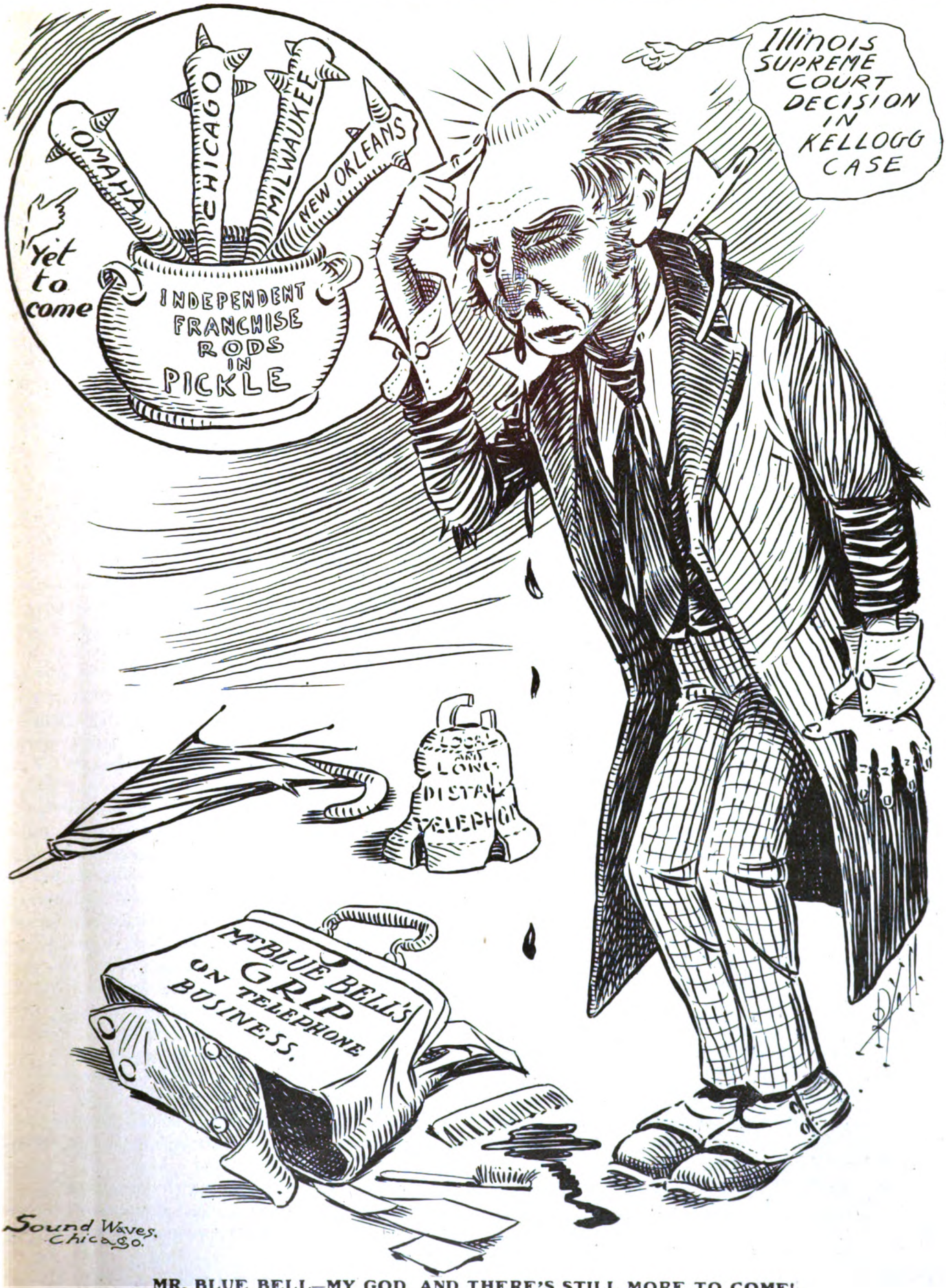

MR. BLUE BELL—MY GOD, AND THERE'S STILL MORE TO COME!

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Any man who has a good article to sell can sell it if he knows how to make his announcements plain, direct, short and to the point.

There is no other "science" to advertising. If a manufacturer is convinced of the merits of his goods and the possessor of a fair education he can write his advertisements as well as any "expert" in the land.

Advertising without a really meritorious article back of it never pays. Printing ink can be used to create an initial demand for an article, but after the first introduction the value of the article must cause the demand.

After the demand is established, the manufacturer must keep his name before the public, regularly and conspicuously. The really successful advertisers in all lines of business act upon this principle. They know that in these days of fierce competition a man or a firm is forgotten in a few months.

No matter how good a machine, or a breakfast food, or a telephone may be, there are others just as good, and the manufacturer who labors under the impression that his name will be remembered is opening the door to the bankruptcy court.

Spasmodic advertising is a poor investment. The man who drops out of the ranks six months of the year is, as a rule, wasting his ammunition. He is like a soldier on guard duty in war time who goes to sleep because he has not seen an enemy for several days. His neglect ends in capture.

Business life is a warfare. The man who gives up just because customers do not come every day as a direct result of advertising is sure to end his career as a failure. Eternal vigilance is the price of success in the manufacturing and commercial struggle.

The man who tells the truth all the time and everywhere convinces the public that he is worthy of confidence.

Now as to how to tell the truth.

Soberly and seriously so that it cannot be misinterpreted or misunderstood. Without unnecessary adjectives and without boasting.

A short time ago the writer saw the following sign in the window of a print shop in Indiana:

"Our prices are no higher than others charge for poor printing."

The writer probably told the truth. His poor printing was turned out at the same price as other poor printing.

But nobody should advertise poor goods even unintentionally. What the man probably wanted to say was that he charged no higher for good printing than others charged for poor work.

At the bottom of a circular recently issued by an electrical firm appear these words: "Don't waste your time looking elsewhere for inferior goods. Buy ours." The intelligent reader is at liberty to explain the two sentences just as he pleases.

The successful advertiser is careful in the selection of words. He may sometimes be humorous, but never silly. Advertising is an expensive commodity and should be treated seriously.

The results obtained depend, as has been said, upon the merits of the goods advertised and upon the way in which such merits are presented.

A five-line advertisement in the center of a magazine page is read by more people than a page of solid agate type; and a good cut goes a long way toward attracting customers.

Above all things, never flirt with the truth; but be faithful to it in any and all circumstances. The liar in business, as in private life, may succeed for a time, but eventually is sure to land in the slough of despond.

DON'T MOPE—WORK AND SING

The manager of an exchange in a town of 2,500 writes that he is discouraged because new business is not coming to him as fast as he expected.

No wonder he is discouraged. The man who in these days of competition sits in his office, waiting for business to come to him, is sure to get left.

If this disgruntled manager, instead of moping in his chair, would put on his hat and call upon the townspeople, or dictate a lot of letters to his stenographer, he would be happier by far and his sighs would imperceptibly change into smiles.

He should, first of all, prepare a list of all possible customers in his town and then interview each one personally or through a competent solicitor. In addition he should use the local newspapers to call attention to his company and the good service which it renders.

He should then keep a close watch on his employes and apparatus, because prompt and efficient service is the principal factor in holding and securing patronage.

He should never lose sight of the fact that the telephone is a necessity to rich and poor and neglect no opportunity to let the people of his town know that in many places, neither more progressive nor wealthier than their own, almost every householder enjoys telephonic communication with his neighbors.

Any man of ordinary intelligence who keeps his exchange before the public and knows how to manage his operators can make the business pay, because there is nothing complicated about it and the application of common sense in large doses is all that is required to make it a success.

The world has no use for growlers and knockers, but is willing to help the man who shows a disposition to help himself.

If our esteemed correspondent will therefore act upon the brotherly advice which we have ventured to give, he will have neither leisure nor opportunity to commiserate his own lot.

He will likewise be far happier and his wife and

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children will hail his advent for supper with pleasure instead of fear; his bank account will be overflowing and his fellow-citizens will rise up and greet him as a benefactor.

And wherever he may go in the pretty little town he will hear the jingle of his telephone bells.

FRANCHISE AND TAXING VALUES.

The Kentucky court of appeals, in the case of the City of Eminence, Ky., against the Cumberland Telephone and Telegraph Company, recently rendered a decision that is destined to be of far-reaching influence in other sections of the country.

The municipality sold to the Cumberland Company a franchise to operate a telephone exchange for a period of twenty years, at an annual rental of $50. Subsequently the council enacted an ordinance imposing a license fee of $50 per annum upon the business of handling pay telephone messages in the city.

The telephone company refused to pay the additional license fee and was sued by the municipality. In the lower court the ordinance was upheld, but the court of appeals reversed the decision.

Mr. Justice O'Rear rendered the opinion in the case, which is given in full elsewhere. His discussion of the meaning of the word "franchise" and of taxing values cannot fail to be of interest to telephone men everywhere.

It is contemptible, however, that the Bell Company which, in this instance, went to considerable expense to defend a "principle" should, in other localities, leave nothing undone to load down Independent telephone companies with taxation, mostly of the unrighteous kind.

In the state of Iowa, for instance, Independent companies are discriminated against in the matter of franchises and taxation because the Bell Company managed to have laws passed years ago which were intended to give it a monopoly of the telephone business.

The Bell Company never begins a legal battle unless it sees a chance to benefit itself or harass its competitors.

In the Kentucky case, however, it has unwittingly secured a decision which will work to the advantage of Independents as well as its own.

TROUBLE HUNTER OR TROUBLE FINDER

There is a vast difference between a "trouble hunter" and a "trouble finder." One is an expert. The other is a mere tyro.

When a "trouble hunter" undertakes to clear a case of trouble he fits and tries until the case is clear, often by a mere mechanical substitution of parts. If the difficulty is not of the kind where a change of parts clears the trouble, a new instrument is installed and the old thrown aside to be examined by some one more competent, or to serve as an addition to the undoubtedly already large collection of junk.

A "trouble finder," when assigned to clear a case of instrument trouble, uses his brains. He reasons out the probable seat of the trouble and quickly locates it.

In one instance we have a guess, fit, try, cut and slash. In the other we have the application of reasoning powers, with the result that the remedy is promptly applied.

Young man, to which class do you belong? Are you still a "trouble hunter?" If so, turn about and make a searching inquiry of yourself. Determine what part of your makeup is in fault. Here, at least, you must exercise your reasoning powers. You cannot cut, slash or substitute.

You must become a "trouble finder," and the application of the remedy rests with yourself.

Why Indianapolis Is Proud.

The Indianapolis Telephone Company has a new central office switchboard of the latest type, having an ultimate capacity of 17,600 lines, with 8,000 lines equipped. This, with their North and South exchanges of 6,000 lines, gives them a present capacity of 14,000 and an ultimate capacity of 23,600 lines. They also announce the extension of their outside construction to the rapidly growing suburban districts of Indianapolis in every direction. This will place the company in position to promptly take care of all applicants for service.

The New Long Distance Telephone Company has just completed the enlargement of its northern terminal facilities at Indianapolis by building four miles of 45-foot and five miles of 35-foot pole lines. It has also completed new No. 10 copper circuits from—

Indianapolis to Thorntown,
Indianapolis to Tipton,
Indianapolis to Elwood,
Indianapolis to Logansport,
Indianapolis to Bedford,
Indianapolis to Gosport.

A total of 385 circuit miles. The company is also installing additional circuits from Indianapolis to Logansport and South Bend, Indianapolis to Wabash, Huntington and Ft. Wayne, Indianapolis to Anderson and Muncie, Indianapolis to Tipton and Kokomo. When these circuits are completed, the company will have 80 toll circuits entering its switchboard at Indianapolis. It is a matter of considerable pride to the company that in eight years it has built up at Indianapolis the largest Independent toll board in the United States.

Interesting Telephone Installation.

The Daily News of Christiania, Norway, says that upon the occasion of the English queen's visit to Norway, the telephone company received a request from the authorities of the English royal yacht Victoria and Albert for a telephone connection with the city exchange. Immediately upon receipt of this royal request, the telephone company sent an installer and inside of an hour a submarine cable was laid from the yacht to the shore and soon connected with the switchboard. The telephone was given a regular number.

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Some Late Chicago Developments

BY WILLIAM WALTER WELLS

To write intelligently about the Chicago telephone situation is a task of considerable difficulty, as the promoters of the various schemes and plans which have recently been submitted to the council and the public are keeping the salient points of all propositions "under their hats."

The editor of SOUND WAVES pointed out last month that Independent entrance into Chicago must come through the Illinois Tunnel Company, if it comes at all in the near future. True, the Illinois Manufacturers' Association submitted a franchise to the council, but its own lawyers admit that the association never had any serious intention of going into the telephone business. The ordinance was introduced merely to force others to come from under cover.

And they came, if the files at the city hall can be depended upon. Three or four ordinances are now before the council, some of which will never be heard from again. On top of all this ordinance excitement came the news that the Illinois Tunnel Company had sold out its embryo telephone plant and franchise rights to a syndicate of Independent telephone men for $1,500,000 or $2,000,000.

A few days later Martin W. Littleton, a New York lawyer and politician, closely identified with the Independent telephone interests of New York, appeared on the scene and informed Mayor Dunne that a corporation had been formed by Independent telephone men in the west and by New York financiers for the purpose of financing and operating the tunnel franchise. Mr. Littleton is said to have informed the mayor that the syndicate represented by him had $10,000,000 at its diposal, $2,000,000 of which had already been underwritten for the financing of the immediate extension of the tunnel telephone plant.

Back of Littleton, so says the rumor, are E. H. Harriman, Kuhn, Loeb & Co., John J. Mitchell and other financial giants, and the telephone men associated with him are said to be E. L. Barber, who is a controlling factor in the Independent telephone movement in Indiana, Col. J. C. Powers, of Louisville, Ky., E. H. Moulton, of Minneapolis, and others of equally high standing.

The Chicago mayor was informed that all the provisions of the charter under which the telephone part of the Illinois Tunnel Company's business is supposed to be operated would be carried out to the letter. Eighty dollars will be charged for unlimited business service and $50 for residence phones. All departments of the city government will have free telephone service and the city will receive five per cent. of the gross receipts of the system during the second ten years of franchise and 7 per cent. during the remainder of the period. After 20 years the city can purchase the plant in accordance with charter conditions.

The Tunnel Company is to receive a big cash payment for its franchise rights and $5 per year for every phone operated by the new company.

Independent telephone systems from every direction of the compass are to have connection with the tunnel lines and within 18 months 100,000 instruments are to be installed with the limits of the city of Chicago. Such, in brief, are the promises said to have been made by Mr. Littleton and by S. S. Gregory, the Chicago attorney of the new company.

Mr. Littleton stated, in addition to this general information, that E. L. Barber would be the general manager of the company and that already he is making arrangements for starting engineering work.

It is rumored on LaSalle street, where the financiers of Chicago are in the habit of congregating, that the Chicago Telephone Company does not view with much alarm the activity of its enemies and that at the first sign of positive competition it will endeavor to tie up the Tunnel Company in the courts for three or four years. In the meantime it hopes that its own franchise will have been renewed.

The Chicago telephone people count upon Mayor Dunne's opposition to the dual telephone system to produce a deadlock in the council and base their hope for procrastination on a clause in the Tunnel franchise which, in a way, prohibits the sale of any of its functions. Mayor Dunne, however, while a believer in one system of telephones, is not a friend of the Bell monopoly and if the issue is forced upon him will probably stand by any company able and willing to give a first-class service at reasonable rates.

The franchise propositions submitted by State Senator Evans, of Aurora, Ill., and Arnold Kalman, of St. Louis and Kansas City, are not given much attention by the Chicago press, although they are bona fide applications and may be given serious consideration by the council committee to which they have been referred.

Senator Evans is the president of the Interstate Telephone and Telegraph Company, which controls a number of the most prosperous exchanges and toll lines in the state of Illinois. It has been rumored for some time that a year or two ago he entered into a tentative contract with the Illinois Tunnel Company for securing an entrance into Chicago and the opinion has been expressed that probably he would rather become a potent factor in the Littleton corporation than push and finance the construction of a new Chicago system.

The Independent representatives of Indiana are in thorough accord with the Littleton syndicate, and this reminds the writer that a number of Indiana companies have equipped their exchanges with automatic apparatus of the same type that is to be used by the Chicago Company which would show that there has been an understanding in certain quarters for quite a long time. Joseph Harris, vice-president of the Automatic Electric Company, will no doubt be a leading figure in the new combination.

Mr. Moulton proposes to extend his Minnesota and North Dakota lines to Chicago, connecting probably with the Interstate in the northern part of Illinois, and possibly with the Independent systems of Wisconsin. It would not be surprising, however, to hear of the formation of a long-distance company in the northwest equal in importance to that recently formed in Pennsylvania and New Jersey. If such a company were formed it might be made to include the Kinloch interests in Illinois and Missouri.

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The possibilities of the situation are simply enormous, and if it is true, as the writer has been informed, that the executive officers of the International Association are supporting the Harriman enterprise the Chicago situation may open the way for the coalition of all the great Independent companies in the United States.

The Illinois Tunnel Company's franchise is an established fact, and so is the proposed sale of the franchise. Everything else is problematical, of course, but all the data here given are so plain and explicit that it is but fair to assume that many of the plans will be executed before long.

It is perhaps not generally known that besides the franchise ordinances submitted within the past sixty days there is one that has been before the Chicago council for a number of years and, according to an eminent lawyer, that old ordinance must be either accepted or rejected before those introduced later can be disposed of. Be that as it may, however, no legal squabbling can interfere with the Tunnel Company's right to operate a telephone line. With the latter the only possible quibble could be, has it the legal right to dispose of a part of the functions for the performance of which it was created?

The Law and the Telephone

BY GEORGE H. MURDOCK, JR.

John A. Blust, while engaged with other employes of the Pacific States Telephone Company in putting up a telephone cable in the city of Portland, was knocked or thrown from the pole, upon which he was working, to the ground by reason of the cable falling and striking him.

The cable was about 1,000 feet long, and consisted of 100 pairs of copper wires incased in a sheathing of lead, and weighed from two to three pounds to the linear foot. It was brought to the place of work wound on a reel, and the manner of putting it up was as follows: A wire rope, called a "messenger," was first strung taut twenty-five feet from the ground on poles 150 feet apart, to support the cable after it was in place. A snatch-block was attached to one of the poles near the messenger, some distance in advance of where it was proposed to commence hanging the cable. A rope passed from a windlass on the ground through the snatchblock along the poles, and was attached to the end of the cable, by means of which it was unwound from the reel and drawn along under the messenger by the persons operating the winch or windlass. From the reel to the pole nearest it was a lead wire, to support the cable until it reached the messenger. As the cable was unwound from the reel one of the crew attached to it, by means of pieces of rope or marline, wire hooks at intervals of ten or fifteen feet, which hooks were placed over the lead wire to support the cable temporarily as it was being drawn up to and along the messenger; but after it was in place it was firmly hung from the messenger by clips about two feet apart. The wire and marline from which the temporary hooks and supports were made were furnished by the company, and cut into suitable lengths and made into proper shape by the employes engaged in the work. Two men were stationed on the pole nearest the reel to lift the hooks from the lead wire to the messenger, and an employe was stationed on each of the poles between the reel and the snatchblock to lift the hooks over the steps on the poles as the cable was being unwound. In putting up this particular cable Blust worked for a time at the first pole to assist in passing the hooks from the lead wire to the messenger, and therefore knew the interval between the hooks and the manner in which they were attached to the cable. He was subsequently transferred to the pole nearest the snatch-block. When the end of the cable reached the snatch-block, he came down from the pole by the direction of the foreman, as he supposed, to go up the other pole and detach the snatchblock, so it could be moved farther along. About the time he reached the ground, however, he saw Sloper, another employe and a member of the crew, go up the pole and remove the snatchblock, and he thereupon climbed up his own pole under the cable and was in the act of fastening his safety belt around the pole, when the supports of the cable gave way, causing it to fall on him, throwing him to the ground, and injuring him severely. When Sloper removed the rope from the snatchblock he did not fasten it to the step or the pole to keep the cable from slipping back.

Blust was an experienced lineman and had been engaged in that business for three or four years. He had worked for the company a considerable portion of the time, and had assisted in putting up cables in the same manner, with the same appliances, and under the same system as at the time of the accident. He commenced work for the company the last time about a week before the accident, and knew the method and appliances used by it in stringing its c ables, and was familiar with the manner in which the work was done, and with such knowledge entered its employment.

In an action against the company to recover damages for the personal injury received, there was evidence tending to show that other, and perhaps safer, methods and appliances were sometimes used by telephone companies in stringing their cables, such as a sheave having an iron frame to which the cable was attached, or hooks made of hard wire as tempered steel fastened to the cable by a clamp or wooden sheave to run on the messenger and attached to an iron frame having a hook at the bottom in which the cable was placed and tied with marline; but there was no evidence that the hooks and marline as furnished be defendant were not such as the usage of the business sanctioned as reasonably safe when properly used. Expert testimony was offered and admitted to the effect that the hooks and marline, as placed on the cable at the time of the acident, were not sufficient to support it, but should have been more securely fastened and placed nearer together. At the close of plaintiff's testimony, the court held that the evidence was insufficient to entitle him to recover, and granted an involuntary nonsuit.

On reviewing these decisions, the supreme court of Oregon affirmed judgment below and said:

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failed and neglected to provide suitable pulleys or supports for the cable while it was being put up, but carelessly and negligently furnished the workmen with unsafe, improper and unsuitable appliances and material; (2) that the company failed and neglected to make and promulgate safe and proper rules and regulations touching the use of the supports or to instruct the workmen in reference thereto; and (3) that the company carelessly and negligently employed incompetent and unskillful fellow servants. It is unquestionably the duty of a master to use due care to provide suitable and safe materials, appliances, and machinery reasonably well adapted to the work in hand, without endangering the lives and limbs of those employed to use the same, but he is not bound to provide the latest or most improved, but only such as are reasonably safe, and of a kind generally used for the purpose. If the appliances furnished or the method adopted by the master is reasonably safe and suitable for the purpose intended, he is not liable for a failure to furnish or adopt others believed by some to be less perilous. And, where a master discharges his duty by furnishing suitable appliances and material for the workmen, he is not responsible for the negligent use thereof by them. Now, in this case, the hooks and marline, furnished by the company for the support of the cable while it was being put up, were suitable and safe and entirely sufficient for the purpose, if they had been properly used. The cable fell, not because of an inherent defect in the appliances, but because the workmen neglected to put the supports sufficiently near together as the cable was being unwound from the reel, and for this negligence the defendant is not responsible.

"But it is argued that it was the duty of the defendant to promulgate and enforce rules and regulations governing the matter of attraction the hooks or supports to the cable, and providing the distances they should be apart. When the business in which the master is engaged is complior dangerous, or where the employe's work is in different departments or at different sorts of work, and the safety of one depends upon the performance of the duties of another at stated times or in a particular manner, it is the duty of the master to provide and enforce suitable rules and regulations governing their conduct and that of the business. But, when the duties to be performed by the servant are simple and the appliances easily understood, rules are not required. Now, there was nothing in the nature of the work in which plaintiff and his fellow servants were engaged at the time of the accident, which required a rule providing how frequently the supports should be attached to the cable, or the manner in which the work should be performed. That was a mere detail left entirely to the judgment and discretion of the workmen. They were at liberty to attach the supports to the cable in such manner, and as close together as they thought proper, and if they were careless or negligent in that regard the company is not responsible, and it was not a matter for it to regulate by rules. For these reasons we do not think Blust can recover.

"But there is another and equally fatal defect in this case. The evidence shows that he was an experienced lineman. He had worked at that business for several years, and was accustomed to putting up cables of the kind which he was at work on when injured. He was familiar, not only with that character of work in general, but with the company's manner of doing it in particular. He had previously worked for the company, and with knowledge of the appliances used by it in stringing cables, and the manner in which the work was conducted, he voluntarily re-entered its employment. If, therefore, it be conceded that there is some evidence tending to show that the company failed to exercise ordinary care to furnish reasonable safe appliances for the support of the cable or to promulgate suitable rules for the conduct of the work, the case is ruled by the established principle that a servant entering or continuing in the employment of a master, with knowledge of the defective appliances used by him or the imperfect method of his work, without objection or complaint, assumes the added risk caused thereby, and cannot recover for an injury resulting from the use of such defective or insufficient method. 'The general rule of the law is,' says Mr. Chief Justice Lord, in Brown v. Oregon Lumber Co., 'that a servant assumes all the risk caused ordinarily incident to his employment, and also all additional or unusual risks which he may knowingly and voluntarily undertake

"A servant who voluntarily enters the employment of another, with knowledge of the defective appliances or methods used by the other, cannot be heard to say that he did not appreciate or realize the danger, where the defect was obvious and the danger would have been known and appreciated by an ordinarily prudent person of his intelligence and experience. There was nothing intricate or complicated about the work in which Blust was engaged. The appliances furnished and used to support the cable, and the manner of doing the work were open and visible, and the danger incident thereto obvious to a person of Blust's intelligence and experience. It was plain and certain to an observing person that, if the cable was not properly supported by hooks attached sufficiently near together, it would fall and might injure the workmen, and without a disregard of the established rules of law there seems no escape from the conclusion that Blust, by voluntarily entering and continuing in the employment of the company, with knowledge of the appliances used and the system adopted by it without complaint, assumed the risk of the injury he sustained. As we understand the record, no particular claim is made that the injury to Blust was due to the act of an incompetent fellow servant. It is true that Sloper, who removed the rope from the snatch-block, was a 'groundman.' He had not yet 'graduated' into a lineman, but the evidence does not show that his failure to fasten the rope to the step or the pole was the proximate cause of the injury. Moreover, Blust was a witness to Sloper's act, and thereafter voluntarily reascended the pole at which he had beeen working, and so assumed the danger, if any, from Sloper's failure to fasten the rope."—Blust v. Pacific States Telephone Co., 84 P. (Or.) 847.

Big Cuban Bond Issue.

The Havana Telephone Company, incorporated under the laws of New Jersey, has made an issue of $1,200,000 5 per cent first mortgage debentures, due in 20 years from January 1, 1906, but subject to call at any time after January 1, 1912, at company's option at 105 upon six months' notice; also redeemable by annual drawings at par (if not purchasable below that price) for a 5 per cent. cumulative sinking fund commencing January 1, 1909. In London recently Frederick J. Benson & Co., having guaranteed the subscription of the above issue, offered the same, on behalf of the company, at 97.

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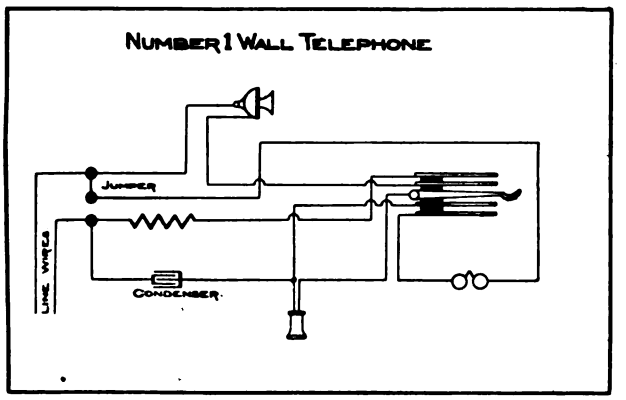
The Evolution of the Telephone Exchange

By P. KERR HIGGINS

ARTICLE II.

So far we have only considered exchange equipment operated by manual help. Two other forms exist: the semi-automatic and the full automatic. The former represents a method whereby all possible combinations are made automatically yet retaining (what its advocates claim is essential) the human or intelligent part, the operator. In such a system the act of taking down the receiver by the subscriber, instead of operating a relay, which in turn lights a line lamp in the manual, selects one of the fifteen pair of connecting cords available at each operator's position and lights the signal lamp. It is apparent that this at once dispenses with



all the answering jacks and line lamps. The operator would then take the call by pulling forward the key corresponding to the lamp lit. Having received the call she will connect in the usual manner, except that only one cord is used instead of two. Here again is a saving, the supervisory apparatus being reduced fifty per cent. and the connecting cords fifty per cent. It is expected by those now developing this form of apparatus to arrange the selection of connecting cords in such a manner as to embrace the whole switchboard. In this way a subscriber calling would be in a position to get in touch with any operator's cord circuits not in use. The positions are also to be so arranged that while the number of connecting cords is fifteen for each position, this number can be reduced to meet the ability of the operator (it being a known fact that all operators are not equally efficient) and this is done by the chief operator cutting out as many cords as she thinks necessary to reduce the capacity of the board to that of the operator. This is also a decided improvement and advantage over the present system. In addition to these are many improvements of minor importance, which, when the whole scheme is fully developed, will enable an operator to answer three times (if not more) the subscribers' lines now possible. This system is now in process of development and was practically complete when seen by the writer in the experimental laboratory of Milo Kellogg, of switchboard fame, in Chicago; and is the development of Mr. Dunbar, formerly of the Kellogg Switchboard and Supply Company.

While this system is not yet in practical use, the writer believes there will be an immediate demand for such, as it is a question whether or not the subscriber will be content to do his own switching, as at present, in the full automatic. The question as to whether he shall do this by automatic means or whether an operator shll do it, is now, and will be, the most important question in the telephone field for some time to come. Not only is this important to the public, but it is equally so to the telephone financier and the engineer, in that its introduction involves different apparatus from that heretofore in use.

Another form of semi-automatic, developed and now being placed on the market, is the "Faller," in which all calls are received by signal, all movements and trunks being also indicated by signal lamps so that while operators do the switching part and observe the signals absolutely no talking is done, simply the manipulation of cords so that a deaf mute would be as good for the purpose as one possessed of all her faculties. In this system no change is necessary at the subscriber's station other than the addition of a sender, which is so arranged that the subscriber makes up his number, which appears before him visually, so that a mistake (with reasonable care) is next to impossible. This Faller sender is designed with a view to simplicity, so much so that a child can use it if he understands numbers. Having set up the number wanted, the act of taking down the receiver sends in the call to the operator. Note that the number remains so that you can find out whether any mistake made was yours or the fault of the apparatus; note, further, that if a mistake is made it can be rectified before the call is turned in. If the line called is busy, he is so notified and can leave the number up to be called later by the simple act of turning a knob for that purpose. Should this sender for any reason fail to operate, or get out of order, the subscriber can still get the exchange, an emergency button being provided at the side of the sender which connects both lines to ground, and such a signal on being received at central will indicate that that line is to be connected to the wire-chief or trouble department, this being done over a part of the circuit separate and distinct from the sender. This sender is compact in form, being four by four inches in size, easily removed for repairs or replacement by a new one. This being so, the necessity for expert trouble men, over and above that ordinarily required, is not necessary. The signaling devices and the switching apparatus are entirely separate. Provision is made in this full automatic so that should one board give out, or break down from any cause, it can be instantly transferred to another without interruption. The number of operators on this system is greatly reduced. One switchboard trouble man can ordinarily take care of a 2,000 line exchange. The floor space is greatly reduced, being about ten feet per hundred lines, the manual multiple board requiring about eighty feet per hundred lines. In this system no multiples are necessary, being strictly a unit system, two hundred lines per unit throughout, or the units may be larger or smaller as desired. It is possible on such a system to divide up a city into as many sections as desired and place a small exchange in each section, thereby reducing the cost of the outside plant to the minimum. The service and

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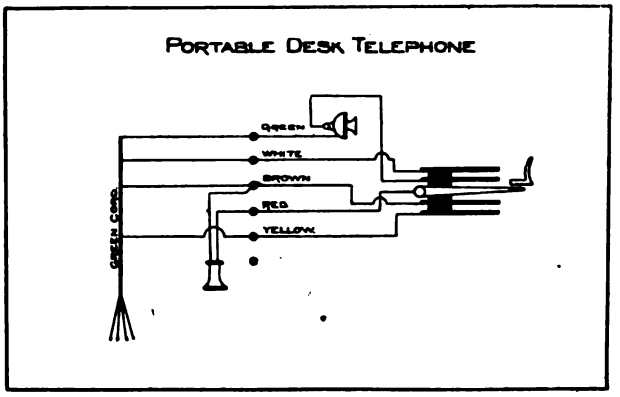
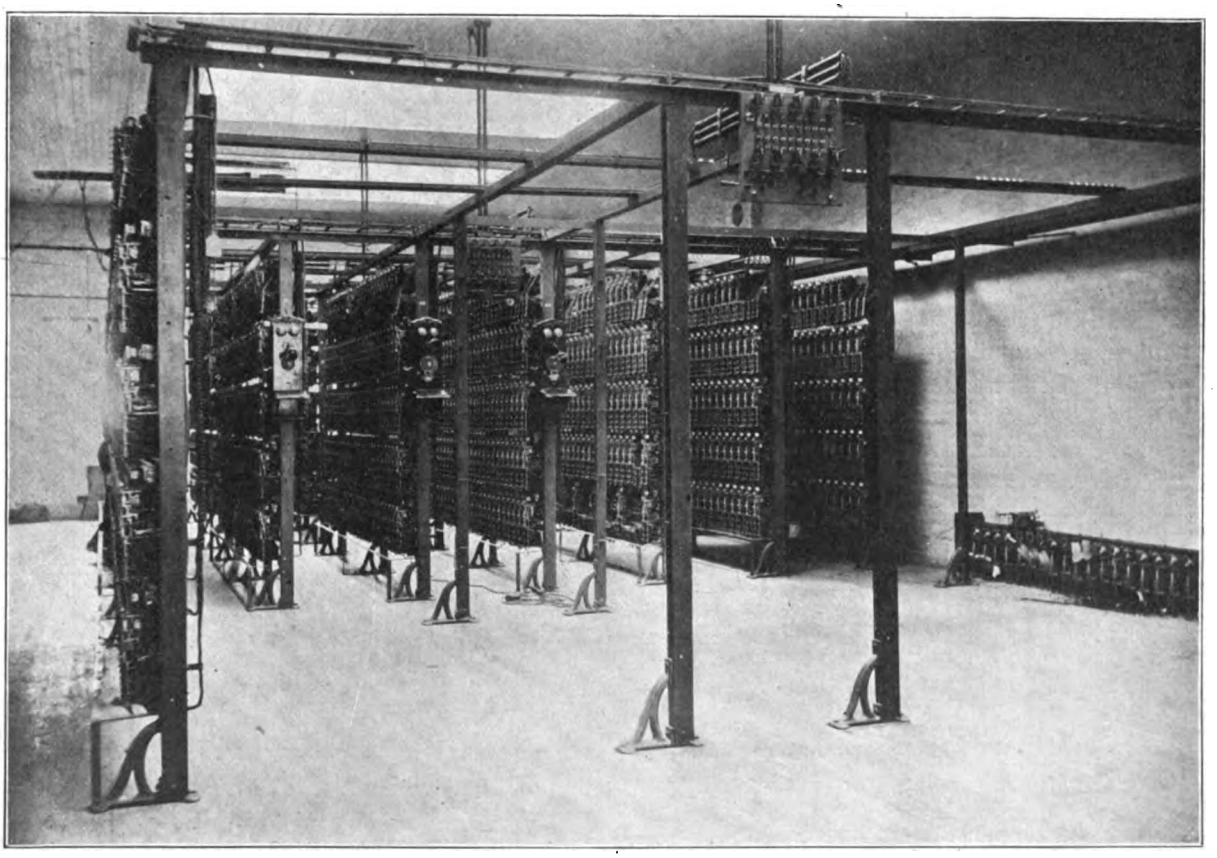
method of operation between units are the same whether located in one exchange or in several exchanges and the speed in transferring or trunking calls almost instantaneous. No mental effort on the part of the operator is necessary other than attention to the visual signals



which guide her every movement, the exact location of jacks being designated by lamps lighting up in response to the calls sent in. The manipulation of two keys is also necessary. The only weak point, as against the full automatic, is in the cords which are always a source of weakness wherever used. No talking or listening apparatus is provided, and so the operator simply performs her work in a mechanical manner. This introduces the secret feature of the system, which appeals so much to the average subscriber and eliminates the most undesirable feature of manual boards, that of visiting between operator and subscriber. All selection of trunk jacks, and in fact every movement she is called upon to make, is done for her automatically, even to the indication of the exact opening where the plug has to be inserted. It is possible to transform and convert boards now in use on full manual systems into this new type and show a saving.

The changing of a manual to an automatic, semi-automatic or, in fact, any system is always a source of annoyance and trouble to the subscriber and is inadvisable if any other way can be found out of the difficulty, such as providing a new room and completing the new before making the cut-over.

We now come to the full automatic system which, in the opinion of the writer, is essentially the system of the future; not as it is to-day (which is a step in the right direction), but as it will be developed and perfected during the next five years. Its introduction will completely put to rout the never-understood paradox (at least by subscribers) that increased capacity means increased expense per line which, while true with the manual, will not apply to modern automatic apparatus. The original automatic system was the creation of Connolly and McTighe, twenty-five years ago, but was based on wrong lines which, while introducing the multiple feature into manual work, retarded the development of the automatic proper. Prior to this all large exchanges were conducted on the transfer plan which, involving the perfect co-operation of two operators, led to errors and delays in operating; but while the modern automatic is also a transfer system all these movements are done automatically and the possibility of errors or delays entirely eliminated; and the attaining of this very desirable feature, from a subscriber's standpoint, has been an expensive one for the operating companies. The two full automatic systems now on the market are the Faller and Stowger.



MODERN AUTOMAEIC SUB-EXCHANGE, 1905, EQUIPPED CAPACITY 800 LINES

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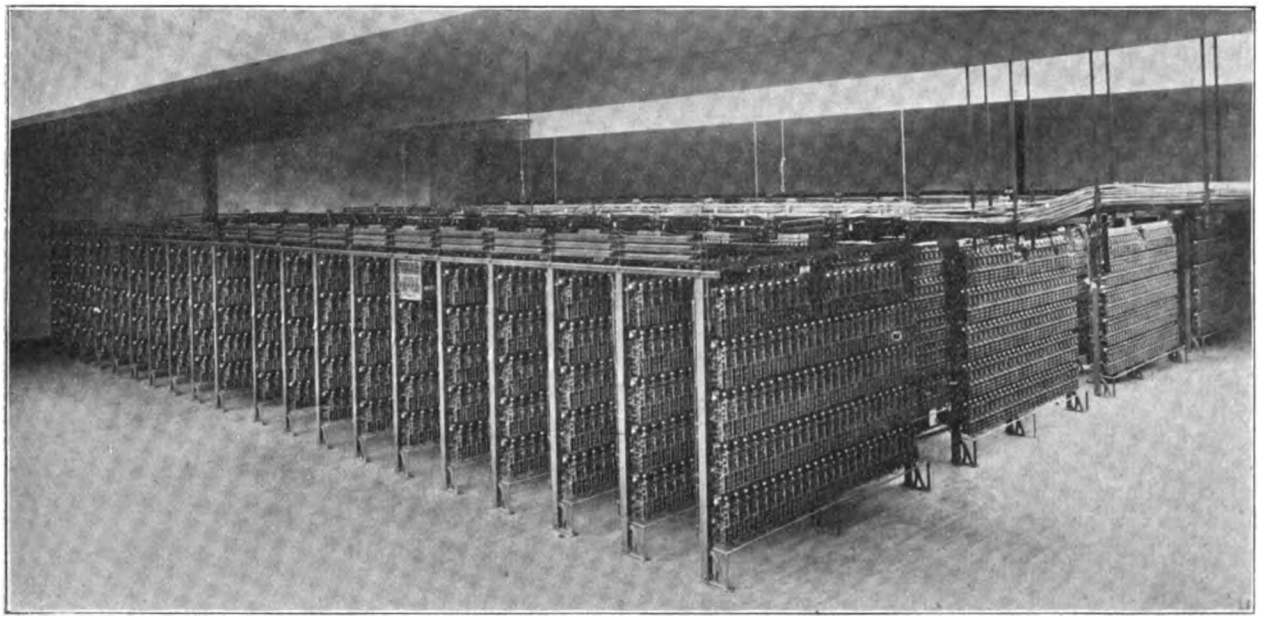
As the writer has not seen the former, and does not know that any have been installed so far, it would be out of place to speak only of the theory which (as I understand it) is that Mr. Ernest Faller's full central energy has the apparatus at the sub-station, virtually the same as described in his semi-automatic system, and that the central office apparatus is a machine with strong contacts and parts throughout, no motor magnets being necessary. Each unit is composed of 100 lines, full central energy, every contact being made and broken by power apparatus with knife contacts, no relays, only fifteen magnets and a total of 44 contracts per unit. No changes in subscribers' instruments are necessary. The cost per line of the exchange apparatus is given at $20, which would make, with sub-station phone, $28 per line as against $25 quoted by the Strowger people. These figures were obtained some time ago and may have been modified since. In the Strowger system, which has become quite popular during the past three years, an evolution has taken place (even in that time) from the series to the bridging, and this, coupled with the fact that party lines are now possible (which only the Faller had before), will make it still more popular. I am referring now to automatic apparatus for large exchanges, there being many forms of efficient and good automatic apparatus that are limited to small exchanges only. The Strowger system is essentially an automatic, transfer system, all connections between units or exchanges being done over trunks. In small exchanges under 100 lines, only one switch at central is necessary; beyond that the trunking feature is introduced. The first switch is called the connector, then come the first, second and third selector switches, according to the size of the exchange. The motions of the switch at Central correspond to the motions of the operator's arm, the horizontal and vertical movements corresponding to similar movements on the part of a manual operator on a multiple board; each of these motions is controlled electrically by a relay, one relay for each movement, and moving in response to definite pulsations (in current) received from or sent in by the subscriber calling. Each notch represents one impulse, whether vertical or horizontal, and the combination of the pulsations and their corresponding movements connect the two lines together. In addition to the present two wires necessary on a manual system, a ground has to be provided for the automatic and performs an important part in all automatic work; and I may say further is responsible for about seventy percent of all trouble on automatic systems, a fact which should be considered by those now spending their time and money in required improvements. At the sub-station the instrument, as can be seen in Figs. 1 and 2 is very complicated as compared with a manual instrument.

Returning to the central office, the automatic switches are also very complicated and necessarily contain a large number of contacts. In the exchange room these are grouped as follows: The first selector switches are grouped in sets or shelves of twenty-five each, together with the necessary second and third selectors and connectors (according to the size of the system.) In boards of one hundred lines each, ten of these boards make a section of one thousand lines, each board being identical with the other. These sections may all be installed in one exchange or in separate exchanges, being interconnected by means of trunks. A "tell-tale board" is provided and a generator lamp board. The ringing current for each of the boards (in a section) is carried through two lamps at this board, so that if a line becomes grounded or crossed or short circuited, the lamp of that board will light when any one attempts to ring out on that line, in this manner calling the attention of the attendant to the fact. An "off normal lamp" is also provided, which lights when any selector for any cause happens to get off the normal point, which circumstance would put the line in question out of commission, hence the lighting of this lamp also advises the attendant of the fact. At the sub-station a special point is connected so that a subscriber desiring long distance connection may obtain same by placing his dial on this point, the act of so doing selecting a trunk to the toll clerk who takes his call in the usual manner. An air compressor is used for cleaning the contacts on the different boards and is in the form of a



TYPICAL AUTOMATIC EXCHANGE, 100,000 CAPACITY, 9,000 INSTALLED OCTOBER 1, 1906, at COLUMBUS, OHIO

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blower. Pipes from the air compressor run to each section, a nozzle is provided to which a rubber tube is attached. The compressor tank is tested to 150 lbs. pressure and is run by an electric motor. A full complement of power machines, accumulators, power boards, auxiliary engine and apparatus, all go to form the complete automatic outfit. The voltage used on the Strowger system is fifty volts which (as previously explained) means better construction and better material all round. A typical Strowger automatic exchange is shown in Figs. 3 and 4.

Another automatic is in the field and is the invention of a Canadian, the Lorimer. The writer has heard it favorably commented upon, but has not seen it in operation nor does he know that it is in practical operation in the United States, except in the factory at Piqua, Ohio.

While the automatic does away with all operators, it does not eliminate entirely the human element in an exchange, as clerks must still be retained for special purposes, such as giving information to subscribers, toll line service, etc. This, however, has to be done even in the manual system and so the claim of the automatic enthusiasts is probably well founded when they claim to dispense entirely with the operators. The probability of dispensing with toll operators is extremely remote, if at all possible. The present advance of the telephone exchange makes it possible to care for a system of one hundred thousand lines which, with party lines, extensions and private branch exchanges, might mean a system of four hundred thousand instruments in use in one city and on one system which, it seems to me, puts an end to our worrying as to how we shall "telephone the large cities," and the beauty of the whole thing is, that this is as simple as installing a 5,000 line exchange under manual conditions and that subscribers get as efficient and quick service as they can in the smaller exchanges, automatic or manual, of to-day.

Novel Cut-Over in England.

The great advances made in the design and construction of switchboards for telephone service have brought about a rapid development in the line of switching apparatus, and after a switchboard has been in service for five or more years it generally represents a type, which, in most instances, may be considered obsolete and uneconomical. This has been the experience of many operating companies for the past five years. Changes have been made in the switching appliances of a very large number of exchanges, particularly those equipped with magneto coil apparatus. Most switchboards are now considered out of date unless they are operated on the common battery plan.

One of the problems in connection with changing from a magneto switchboard to common battery is that the service given to subscribers must not be interrupted, and the problems which the engineering departments of manufacturing and operating companies are required to meet always are of a complicated and interesting nature.

In a recent article in the Electrical Review, London, England, a description is made of a new common battery exchange installation. This equipment consists of a 2,600 line exchange equipment and approximately 2,000 trunk lines. The magneto exchange was connected together with the common battery exchange by means of cable, and in order to prevent any interference, the cut-off relays in the new exchange were provided with a unique means for preventing the signalling circuits of the C. B. exchange from interfering with the operation of the old exchange. Different plans have been tried for accomplishing this result. Strips of paper have been inserted between the selector and back contact springs of the cut-off relays, and arrangements made for drawing these strips of paper out of the cut off relay while making the change over. However, the platinum contact generally pressed into the paper and caused it to stick, thus leaving the relay circuit open.

In making the shift in the London exchange an excellent plan was adopted, and it was feasible only on account of the cut-off relay being set with their springs vertical instead of horizontal. The following plan was adopted:

Thin glass disks, such as are used to cover objects prepared for microscopic investigations, were placed between the contact springs and held in place by the backward tension of the selector springs. This plan permitted of inserting the heat coils in the new protector equipment, and, in fact, installing everything in the new exchange in readiness for placing it in service. The shift was then conducted as follows:

In the old exchange a piece of tape was placed down behind a group of heat coils and the ends of the tape were tied together. This then permitted of pulling out a group of 50 heat coils at one time, which work was quickly accomplished. This act completely opened the old lines. At the same instant the operators in the common battery exchange were instructed to plug into each line circuit in succession. The moment the plug was placed in the line jack, the cut-off relay was energized and the selector spring carried away from the back contact. This allowed the microscope cover glasses to fall to the floor, and upon withdrawing the plug the common battery line was cut into circuit, and any subscriber calling in would naturally energize the line relay at the common battery board.

The novel feature of this change-over consisted in using the microscope cover glasses for holding the common battery circuits open until the common battery switchboard operators placed the plug in the line jack. It should be understood, however, that unless the cut-off relays are mounted with their springs vertical this scheme cannot be successfully applied.

Freeze Out Game Doesn't Work.

According to Mr. S. Harper, one of the directors of the Assumption Mutual Telephone Company, the Bell people are up to their old tricks in that lively Illinois community. The local company which was running things before the advent of the new Independent company was a sub-licensee of the Bell, and although the new company has taken practically all the Bell country and a large number of the villlage 'phones, having in fact twice the number of subscribers, yet the Bell is going to all kinds of expense, putting in a $1,000 switchboard, a lot of 40-foot poles, painted white and black, and hundreds of feet of cable, and employing a lineman at a big salary in place of an irresponsible boy formerly employed. All of which is evidently done to freeze out the Independents who, however, are prosperous and have the people with them. Still, it is not altogether pleasant to be up against a corporation that wastes money just to keep the other fellow from making a decent living.

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Selective Party Lines

By EINAR BROFOS

PART I.

Currents of Different Electrical Characters.

Telephony, although it is a comparatively new branch of the electrical science, calls for the application of more characters of electrical currents than any other branch of the science. This fact has developed particularly since the introduction of the different systems of selective party lines.

Before going into this matter more thoroughly it may be best to determine what kind of electricity is generally used, together with a definition of the class mostly applied in telephone work.

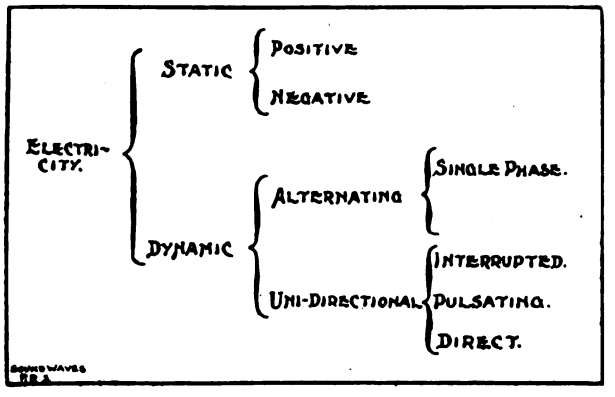

Fig. 1.—Currents of Different Electrical Character.

Electricity may be considered under two distinct headings, viz.: first, static; second, dynamic electricity.

We shall only briefly consider static electricity by giving a general description.

There are two kinds of static electricity; one called positive and the other negative. They exhibit properties to a certain extent similar to that produced by a magnet. These two kinds of electricity are also defined as "electricity at rest," and they generally appear as a charge upon bodies.

Friction, when suitably applied, usually is a source of static electricity; as, for instance, by rubbing a glass rod or a stick of sealing wax a static charge is produced.

Another familiar example of static electricity is the charge which is held on the two leaves of a condenser after the condenser terminals have been connected to a source of constant dynamic electricity.

Dynamic electricity may be defined as "electricity moving" and "electric current." Generally there are two distinct classes, viz.: uni-directional and alternating current. These currents may, however, again be subdivided. Take, first, the uni-directional current: We have three subclasses, viz.: Interrupted current, designated "I C." Pulsating current, designated "P. C." Direct current, designated "D. C."

The alternating current ("A. C.") may also be divided into several sub-classes, which, howevere, we shall not refer to in this article, the article being limited to the single phase alternating current which will be referred to in its proper place.

In order that the different currents referred to above may be shown in a way which will be understood at a glance, reference is made to Fig. 1. It will be observed that under the heading "Electricity" we have two classes of static and dynamic electricity. Static electricity is divided into two classes—positive and negative. Dynamic is divided into two classes—alternating and uni-directional. And under "alternating" we have a single phase current, and under "uni-directional" interrupted, pulsating and direct currents. This gives us four classes under dynamic electricity: single phase, interrupted, pulsating and direct currents. These four kinds of current, it should be understood, do not differ greatly from each other. On the contrary, these currents are substantially the same, differing only in character or form. We may say that the difference is somewhat similar to that between water in a quiet mill pond and the sea during a gale. In both cases the medium is water, while the apparent effects are different. Omitting, however, the well-known water analogy, a good, practical definition of these four currents might be presented by the aid of the fundamental principles of the dynamo or electrical generator. Such machines, although presenting a rather complicated appearance, are quite simple when their operation is properly understood. Let us assume that it is a well-known fact that when a current is flowing in a wire it is surrounded by magnetic lines, generally called "lines of force." The direction of these lines depends on the direction in which a current flows in the wire. On the other hand, when a wire is moved across a magnetic field in such a way that it will cut the magnetic lines of force, an electro-motive force (E. M. F.) will be generated by induction in the wire so long as the wire is in motion in such a direction as to cut the lines of force. The intensity of this induced E. M. F. will depend on the speed with which the wire is cutting the line of force, and upon the direction in which the wire is moved. If the wire cuts the magnetic lines at right angles to their

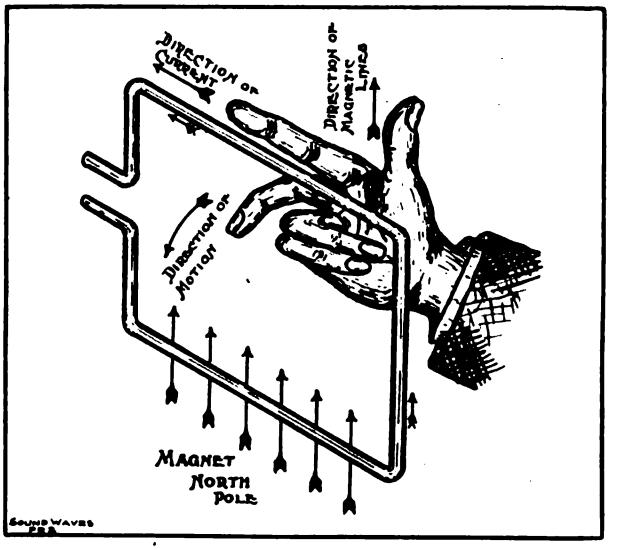

Fig. 2.—Relations Between Motion, Magnetism and Induced Current.

flow, a maximum E. M. F. is developed, while if the wire is moved parallel to the lines of force, no E. M. F. will be generated. At intermediate positions in the travel

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of a wire upon the armature of a generator the E. M. F. will be correspondingly increased and decreased.

It may be suggested for the benefit of those who have not given much study to the operation of a dynamo, that E. M. F., or electric pressure, is defined as "ability to do work." As an example, imagine a cubic foot of water elevated one foot from the sea level. This water, owing

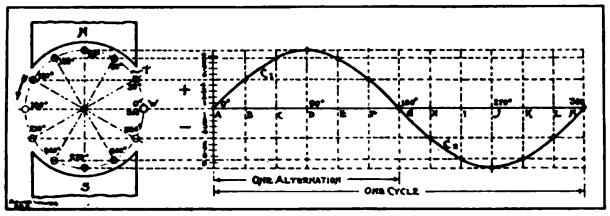

Fig. 3.—The Alternating Current Curve

to the force of gravitation, will have a tendency to fall towards the earth, and, when released, this will be the result, thereby producing a certain amount of work.

Now, then, referring back to the moving wire passing across a magnetic field, it is stated that an E. M. F. is created in the wire. This E. M. F. would, similar to the elevated cubic foot of water, have a tendency to fall or decrease, and when properly released will produce work. In releasing electric current, it is only necessary to connect together the ends of the moving wire, and a current will flow in this wire so long as the E. M. F. is present. This action of a magnetic field on a moving wire is

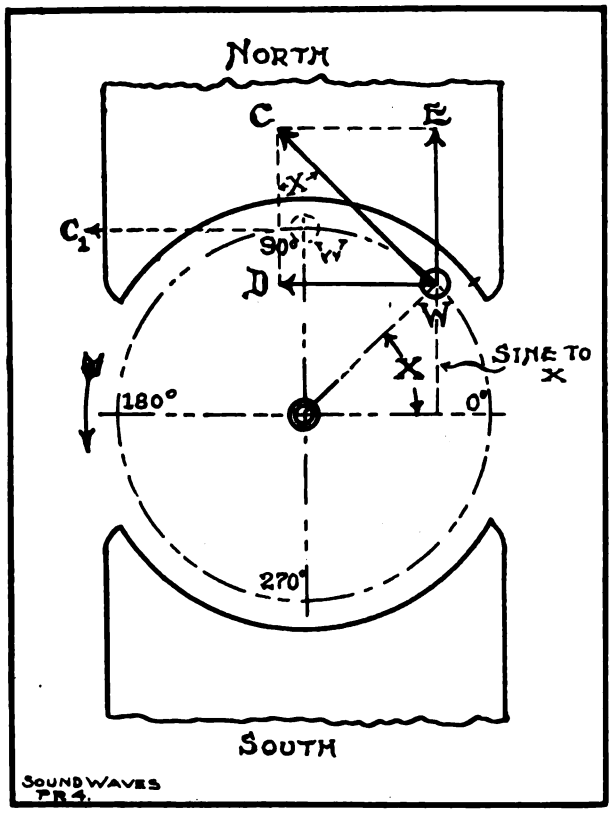

Fig. 4.—Relations Between Maximum and Instantaneous Values of Alternating Current

called "induction," and the current which is produced is called an "induced current." The direction of the induced current depends on the motion of the wire with respect to the direction of the magnetic lines. To permit of an easy conception and a ready method of remembering the relations between motion magnetism and induced currents, Dr. Fleming gives an excellent rule which is shown by Fig. 2, and explained as follows:

When the first three fingers of the right hand are placed so that they are at right angles to one another, if the middle finger is pointed in the direction the wire is moving, the thumb in the direction of the magnetic lines of force, the forefinger will indicate the direction of the current induced in the wire.

In the commercial forms of dynamos, instead of utilizing one loop of wire, the magnetic lines are made to act on several wires placed on the outside of the armature, and these wires are connected in certain ways and the collection of wires all brought to suitable terminals, as will be explained further along. This armature, when properly arranged, is then rotated between the poles of a magnet. However, in order to more thoroughly understand the principles of the operation we will consider that only one loop of wire is moving between the north

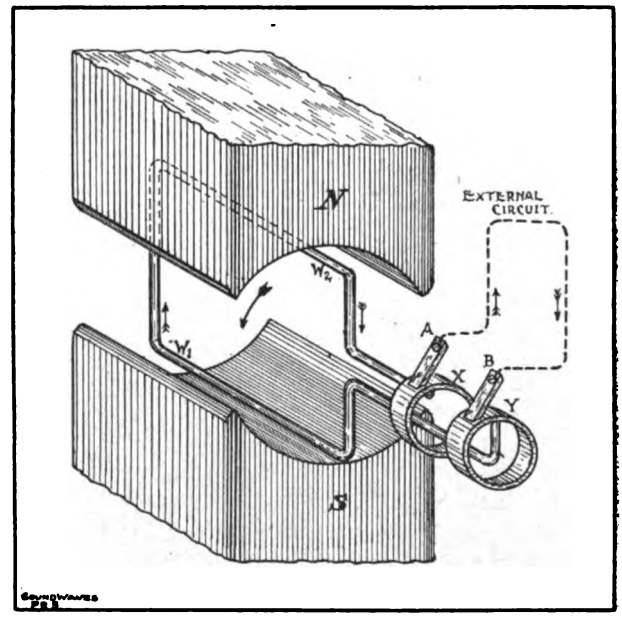

Fig. 5—Principle of the Alternating Current Dynamo

and south poles of a magnet. Referring to Fig. 3, say W represents a wire vertical to the paper and revolving between the poles N and S at a uniform rate of speed. The magnetic field having a uniform density, this wire rotating around successively, occupies the 12 positions shown on the drawing. The right hand portion of the figure represents the curve of E. M. F. as induced in the wire during the revolution. This curve is constructed as follows:

Divide the line A-M ,representing the circumference of the circle T, into 12 equal spaces. Each space, therefore, being the length of the periphery of a 30 deg. angle. From the points A-B-C, etc., draw lines perpendicular to the lines A-M. Then from the different positions of the wire W draw lines parallel to line A-M. Through the intersections between the corresponding horizontal and vertical lines, draw the curve C1, C2. This curve, therefore, represents the relative induced current at any interval.

It will now be observed why the current is flowing in the wire as shown by the curve.

Referring to suggestions made above that the intensity of the E. M. F. depends on the rate of cutting the magnetic lines of force, it will be understood that

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when the conductor is at the position shown at O deg. it is moving parallel to the lines of force, consequently not cutting any lines, and no E. M. F. will be induced in the wire. Hence at O deg., at Point A on the curve,

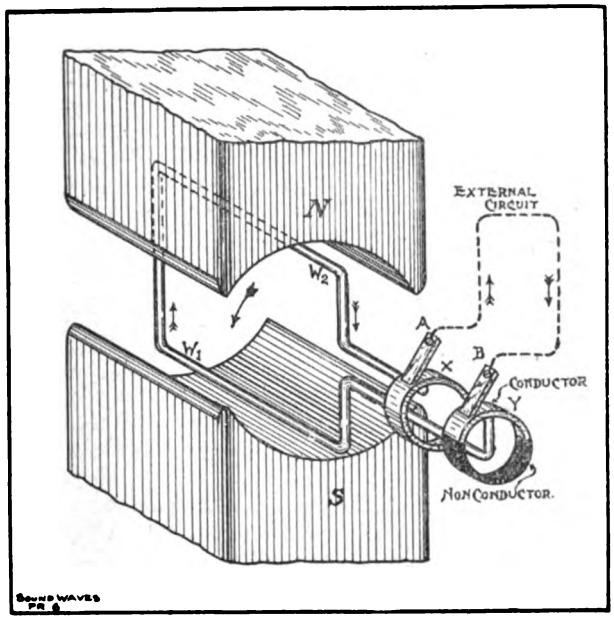

Fig. 6.—Principle of the Interrupted Current Dynamo

the value is O, which, therefore, forms a straight point of the curve. As the wire moves along it cuts an increasing number of magnetic lines of force, and consequently the E. M. F. will increase at the same rate until we reach the point 90 deg., where the wire is absolutely under the center of the pole N, where it cuts direct across the field, and at this time generates the maximum E. M. F. From this point on the wire travels through a decreasing number of lines of force. Therefore the E. M. F. will gradually decrease at the same rate as it previously increased until we reach the 180 deg. point, where it will again move parallel to the lines of force, and the E. M. F. in the wire will again be zero. After passing the 180 deg. point, the wire again commences to cut an increasingly number of lines, but now the wire is cutting the lines in an opposite direction to what was done before, and consequently in accordance with the rule shown in Fig. 2, the induced E. M. F. will be in a reversed direction. As the wire travels along it will again increase

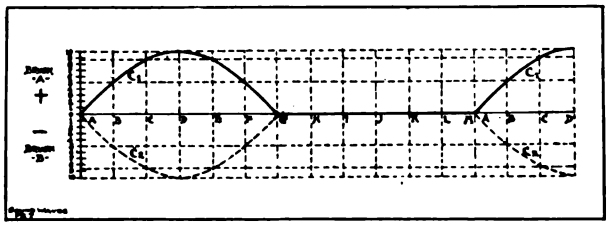

Fig. 7.—The Interrupted Current Curve

the induced E. M. F. to a maximum at the point 270 deg. and gradually decrease to the starting point 360 deg.

By continuing the rotating of the wire, the same series of changes will be repeated with every revolution.

According to the above assumption, the induced E. M. F. rises from zero to a maximum, decreases, reverses, again rises to a maximum in the opposite direction, and decreases to zero again. A complete set of values, including positive and negative directions through which an alternating current passes, is called a "cycle." The number of cycles per second is called the "frequency." Therefore, referring to Fig 3, the distance A-M, or, rather, one complete rotation of the wire W, is one cycle. The distance A-G is called one alternation, which therefore makes one cycle equal to two alternations. That is to say, two alternations of current are required for making one cycle. The E. M. F. which is induced in the above mentioned wire is called a single phase alternating current, and when both ends of the wire are connected together an alternating current flow is induced, which current continues to flow so long as an E. M. F. is maintained in the wire.

The curve which is shown in Fig. 3 illustrates the so-called "sine curve," or the theoretical curve of an alternating current. The term "sine curve" is derived from the fact that the instantaneous values of an alternating current with the wire at a certain angle is equal to the maximum value times the sine to the angle, which the wire makes with respects to the zero position. Placed into an equation form, we have the following:

(1) E. M. F. inst. equals E. M. F. max. X sin. X.

This may be more readily understood by the aid of Fig. 4. The wire W is shown to be in a position between the horizontal line making an angle X with the horizontal or O degree. One of the well-known laws in me-

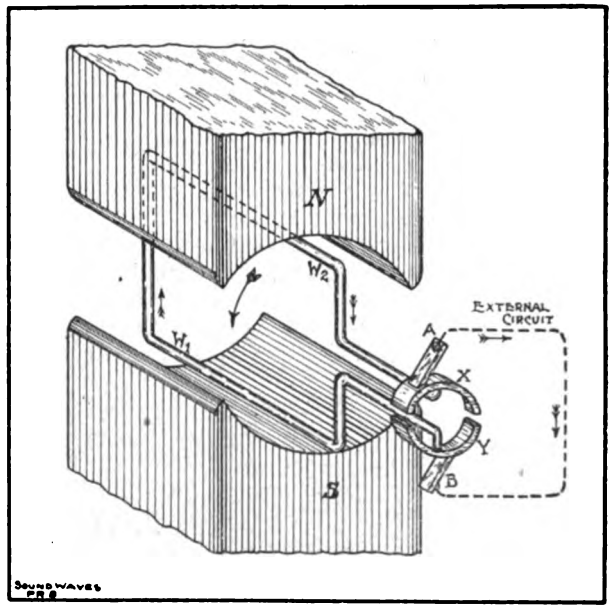

Fig. 8.—Principle of the Pulsating Current Dynamo

chanics teaches us that a velocity may be separated into two parts by the parallelogram law. Let C represent the velocity of the wire W. This velocity will always be in the same direction. By the parallelogram law, which states that a force or velocity may be divided up into two or more components, this velocity is equal to the two velocities, EW and DW. The vertical component EW is parallel to the direction of the lines of force and is therefore valueless in producing speed or E. M. F. But the component DW is directly across the lines of force, and therefore useful in producing E. M. F.

In calculating the voltage at any point it will be sufficient to consider this useful component alone. Here, then—

(2) DW equals CW X sin. X.

As the E. M. F. induced is, as before stated, propor-

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tional to the velocity or speed of the wire. We observe that formula 2 is equal to formula 1.

Fig. 3 shows us that the maximum E. M. F. is produced when the wire coil is in its vertical of 90 deg. position. By referring to Fig. 4 we further see that in this position there is no idle component EW and consequently the entire velocity C is applied for moving the wire di-

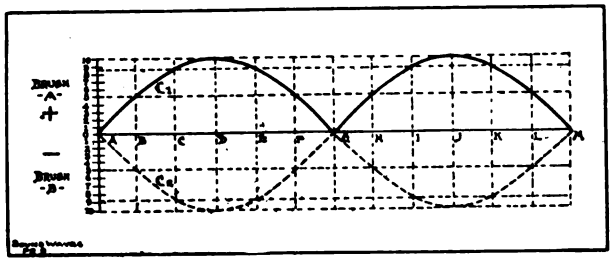

Fig. 9.—The Pulsating Current Curve

rectly across the field. This fact may also be proved by formula 1. We know that sin. to 90 deg. is equal to 1, and therefore, E. M. F. inst. equals E. M. F. max.

Fig. 5 shows how the alternating current is conducted from the rotating wire to an outside circuit. W1 and W2 represents a coil of wire mounted so as to rotate between the N and S poles of a magnet. The ends of the coil are connected to collecting rings X and Y mounted on the shaft with the armature, both being insulated from the shaft and each other. On each segment of the commutator a metal brush A and B. serves the purpose of conducting away the current. The alternating current, which is produced in the same manner as shown by Fig. 3, will then pass from the coils through one segment of the commutator to the brush over the outside circuit and then back through the remaining brush and commutator segment to the coils of the wire.

We understand from the previous that the current induced in coil W1 W2, Fig. 5, during one-half of a revolution flows in one direction (positive) while the remaining part in the opposite direction or negative. It is, however, found desirable to produce a current which flows in the external circuit only in one direction.

Referring to Fig. 5, and supposing that it is required to obtain a current from brush A which always flows in one direction, say of a positive sign, and from brush B a corresponding current in a negative direction.

A current of this character is the interrupted current and how this may be produced from a dynamo is shown in Fig. 6. We know that when wire W is moving under an S. pole, a current flowing in a certain direction is induced in wire W1, while when W1 is moving under the N. pole the current induced flows in the opposite direction.

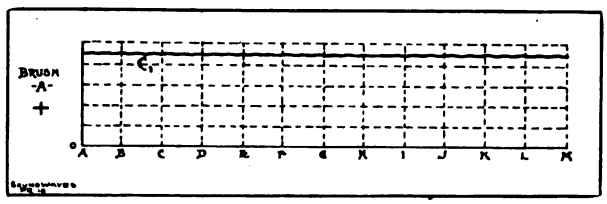

Fig. 10—The Direct Current Curve

The current as induced in W2 will flow in a corresponding opposite direction. Therefore, if the wire Y is split in two and only one-half connected to one end of the coil W1, and if this half ring is placed in a certain position with respect to the poles N and S so that the brush B will only pick up the current as induced when W1 and W2 passed under a certain pole, then an interrupted current will flow in the external circuit. This current would be of a character as shown by Fig. 7, and is developed from the same dynamo shown in Fig. 6 in the following manner: With the coil W1 W2 in the position shown, the E. M. F. and current would be of a maximum value and at D (Fig. 7) flowing in the direction indicated from coil W2 to brush A segment X through external circuit to brush B, the half ring Y back to coil W1. As the coil moves along in the direction indicated, the E. M. F. decreases, following curve C2 until when at 90 deg. or quarter of a revolution from the starting position the E. M. F. is zero. (G on curve). At this position of the coil the segment Y is so located with respect to the brush B that it is about to break contact with the conducting part or segment Y of the ring. During the remaining half of the revolution, the brush B is disconnected from coil W1 and consequently no current will flow, but the current values would follow the zero line from G to M. At this position, however, the coil W2 is entering under the N pole, while the coil W1 is doing the same at the S pole. The brush B is now about

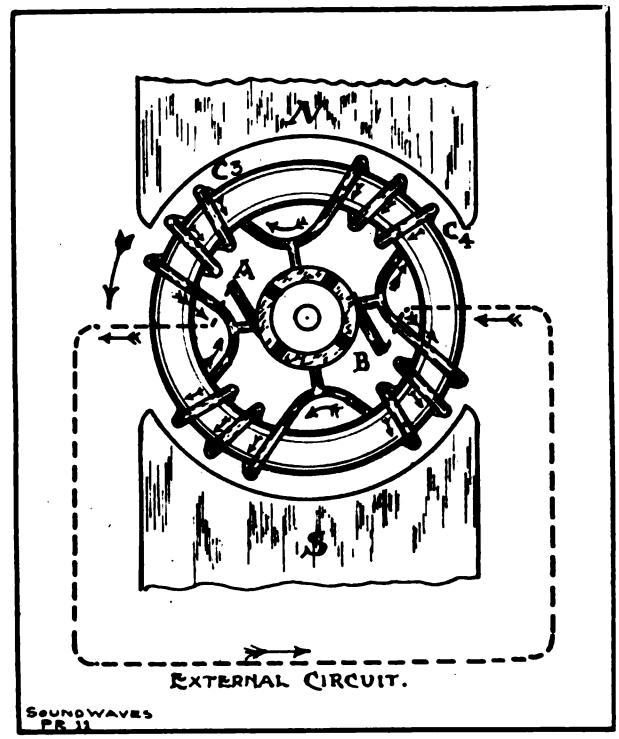

Fig. 11—Principle of the Direct Current Dynamo

to make contact with segment Y and a current will again start flowing. As the coil moves, a steadily increasing current is produced until the coil is in a vertical position, when the current is maximum (position D on curve). As the coil continues rotating the same series of changes will be repeated as explained.

If we compare the curves in Fig. 2 and Fig. 6 we see that the difference between an alternating current and an interrupted current consists in the fact that one-half of the current which could be obtained from the interrupted current dynamo is not used, i. e., the part (—) minus is left off of curve C1 and (X) plus off of curve C2. We may therefore understand that the interrupted current dynamo is not so efficient as the alternating current machine, considering the amount of wire and iron used in the construction.

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The pulsating current dynamo eliminates this defect to a great extent and at the same time delivers a current of a different character. We may obtain this kind of current from the same machine, as is shown in Fig. 5, by changing the two-collector ring to a so-called commutator, as shown in Fig. 8. This commutator consists of two half split rings or segments, X and Y, placed directly opposite, and insulated from each other. Each segment is connected to one end of the rotating coil.

How this current is produced in the dynamo may be explained by the aid of Fig. 8. With the coil W1 W2 in the position shown, the E. M. F. and current will be

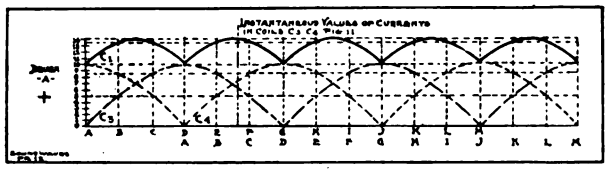

Fig. 12.—Principle of Direct Current Curve

of a maximum value, flowing in a direction as indicated, i. e., from the coil to segment X brush A through external circuit to brush B and segment Y back to coil W1. As the coil moves along in the direction indicated, the E. M. F. gradually decreases until when at 90 deg., or one-quarter of a revolution from the starting position, the E. M. F. is zero. At this position of the coil the segments are so located with respect to the brushes that these are about to break contact with one segment and make contact with the next. As the coil continues to rotate an E. M. F. is induced in the opposite direction, but the segments have now changed position with respect to the brushes, so that the current in the external circuit is in the same direction as before. That is, when the coil W1 W2 is in a position as indicated, segment X will deliver current to brush A, but when the position of the coil is reversed, segment X will be under brush B and receive current from it. The purpose of this commutator is therefore to transform the alternating current in the coil to a pulsating current in the external circuit.

It may also be noticed that whenever the E. M. F. as induced in the coil is at zero, the reversal of the commutator occurs. In this way the spark which otherwise would pass is decreased to a minimum. This current will be of a form as shown in Fig. 9. That is, the current starts at zero, gradually increasing to maximum, then again decreasing to a zero value. When zero is reached it will immediately start to increase again to max., and so on in the same manner as before.

By comparing this curve with the alternating current curve in Fig. 3, we see that the difference is, practically speaking, that the minus portion of the A-C curve has been turned over to a plus position.

It may also be noticed from Fig. 9 that the pulsating current is of a more efficient character than the interrupted current shown in Fig. 6, owing to the fact that the time which the current is at zero is of an infinitesimal value.

It is very often required that uni-directional current of as constant a value as possible should be produced. That is, a current of a form as shown by Fig. 10. This current is termed a "direct current," and is the same as the pulsating current with t he exception that the pulsation in the current is decreased to a minimum, or as shown by Fig. 9, practically eliminated.

The D. C. may be obtained from a dynamo of the same design as the one shown in Fig. 8, with the exception that instead of one coil of wire several coils are used and a commutator made up of an equal number of segments. The coils are interconnected so that the E. M. F. as induced in each is added to that of the other. In order to give an explanation of this without making it too complicated, we will suppose we have two coils at right angles to each other revolving between a north and south pole, as shown in Fig. 11, and connected in a manner as to assist each other and deliver a direct current to the external circuit. Then while the max. E. M. F. is induced in one coil, no E. M. F. will be induced in the other, and at intermediate points there will be gradual changes. In Fig. 12 the dotted curves C3 and C4 indicate the E. M. F. induced separately in the two coils. Coil C3 being quarter of a revolution or 90 deg. in advance of C4. As may be noticed, each separately dotted curve is of the same shape and character as the pulsating current curve in Fig. 8. The combination of these two curves produces the curve C1 shown in full lines, which is formed by taking the algebraic sum of the vertical projection on the dotted curves C3 and C4. The curve in full lines therefore represents the fluctuation in E. M. F. or current of the combined coils and it is evident that the amount of fluctuation in the resulting E. M. F. is greatly reduced only by multiplying the coils and segments.

In a similar manner it may be shown that a further increase in the number of coils, spaced uniformly, will cause less and less fluctuation and by using 40 or more coils and segments a current of practically constant value may be obtained as shown by Fig. 10.

In conclusion it may be mentioned that the curves as shown represent the much desired theoretical shape which, however, is not often obtained in practice. The current curves as generally produced are of a more or less distorted form .

It may also be said that these different currents may all be produced from different sources besides the dynamo.

(To be continued.)

Alleged New Wireless Telephone

The Paris journals report that M. Maiche, a well-known inventor, has made a sensational discovery in the field of wireless telephony. His new apparatus consists of two posts which are placed in his premises. Each post consists of a telephone, battery, a special form of induction coil and a frame which is formed of a series of insulated wires One post is placed in the garden and a second one in a room in the building some distance off, about 100 feet, and several walls, doors, and windows come between the posts. Conversation can be carried on easily, and the sound is clear. The inventor started five years ago to work on the question. At the chateau of Marchais, belonging to the Prince of Monaco, he made experiments using the earth as a conductor, and these were successful at a distance of two miles. One year afterward he was able to communicate between Toulon and Ajaccio in Corsica, over the sea, at 180 miles distance, using the sea as a conductor for the waves. These experiments were kept secret, however. As the new apparatus works without the use of ground, the results are more important. He expects to increase the distance indefinitely by giving more power to the apparatus, which is only in its first stages. Submarine boats could use the system to good advantage.

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Line and Supervisory Pilot Signals

By H. P. Clausen.

Are supervisory and line pilot signals a necessary adjunct to common battery switchboards? If so, under what operating conditions should these signals prove of most value?

This question relating to supervisory and line pilot signals naturally suggests itself to one who has to do with the operating of an exchange equipment, and who makes a special effort to reduce the current consumption to the lowest possible limit, for the lower the amount of current you require for operating the exchange the lower will be the cost of electricity, and any plan which leads to a discussion of this subject should at least be of interest, if not even result in some benefit, not only to the operating company, but also to the manufacturer.

As is the usual practice in the larger common battery exchanges, the answering cord supervisory lamp is supplied with current through a pilot relay; this pilot relay receiving current whenever a lamp burns on the answering cord circuit. In combination with the supervisory pilot relay, it is the usual practice to install a pilot lamp on the main switchboard, and the monitor's desk.

Figure 1 shows the usual circuit arrangement for such equipments. The line relay represents the line circuits, and when energized draws up its armature and causes a flow of current through the line lamp and the line pilot relay. This relay is common to an entire position of line lamps. Upon the line pilot relay drawing up its armature, it results in lighting both the line operator's pilot lamp and the monitoring operator's pilot lamp; and, as will be explained, in some cases the chief operator's desk is also provided with a pilot lamp as shown by the diagram.

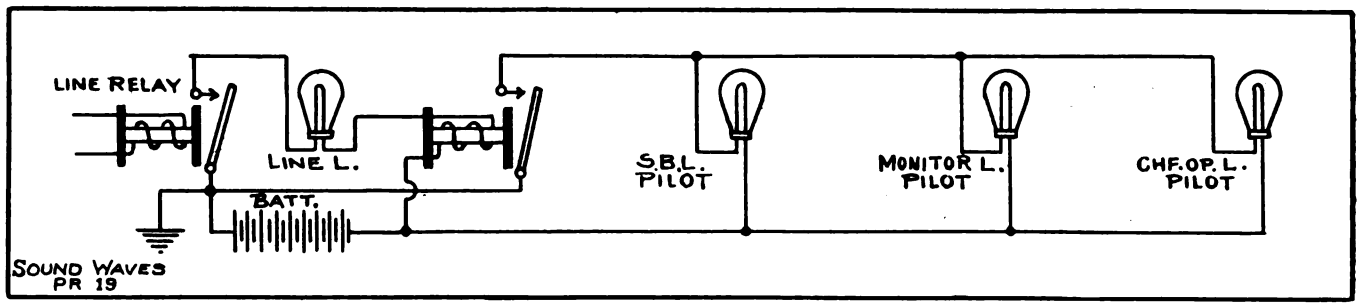

Fig. 1.—Line Pilot Connections, Common Practice

With this circuit installed, as explained, should a supervisory lamp on the answering cord light, it results in lighting the supervisory pilot lamp on the main switchboard, as well as on the monitor's desk. This signal, while it may not be of any special benefit to the switchboard operator, does provide a means through which the desk monitor can observe the promptness with which the switchboard operator attends to disconnect signals, for, as a rule, the answering lamp of a cord circuit does not light unless it is for the purpose of a disconnect, and should it light at other periods, it would be during the time that an operator has placed an answering cord into a calling subscriber's line jack and is endeavoring to raise the called for subscriber, and while making this effort, the calling subscriber desires to change the instructions, and by working his hook switch attracts the operator's attention. It is at this stage that the supervisory pilot is of real benefit, for the flash of the pilot lamp is more noticeable than the flash of a supervisory lamp, and therefore results in immediate attention on the operator's part.

A further use of the supervisory pilot consists in the floor monitor being enabled to observe the condition of the supervisory lamps on the operator's position while walking back and forth behind the operators, for the monitor is not always able to see the supervisory lamps, but cannot miss seeing the pilot lamp. And, after all, it is the "calling for further attention" and disconnect signals which the floor monitor desires to have attended to promptly. Therefore, it does not appear advisable to abandon the supervisory pilot lamp which ordinarily is placed on the main switchboard, providing that a floor monitor is employed.

Now as respects the installation of the supervisory pilot lamp on the monitor's desk, opinions differ as to the necessity for installing supervisory pilots on this desk. There is, however, no question but that the supervisory pilots should be installed on the desk even though they are arranged so that during the periods that the floor monitor is on duty the supervisory monitor's desk may be cut out of circuit and in this way saving a current loss through a needless lighting of the lamps on the desk where the floor monitor is already observing the signals on the board.

This feature is illustrated by Figs. 2 and 3. In Fig. 2 we have the same circuit arrangement shown in Fig. 1, with the exception that the pilot lamp circuits may be opened, and further that the chief operator's desk is not provided with a lamp of this character. In Fig. 3 this shows a form of cord circuit common to many exchanges and illustrates one method for supplying supervisory lamps with current, and also shows how the supervisory pilot relay is energized. This pilot relay, when drawing up its armature, of course supplies current to the supervisory pilot lamp on the local operator's position, and also supplies current to the supervisory pilot lamp on the monitor's desk. Either of these lamps may be disconnected from the circuit as was explained in connection with Fig. 2.

With reference to the line pilot, it is so arranged that when a subscriber removes his receiver from the hook switch, which causes the line relay to draw up its armature and light the line lamp, it results in energizing

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a line pilot relay and lighting the lamp installed on the main switchboard, and in most cases also lighting a lamp installed on the monitor's desk, while in rare cases the chief operator's desk is also supplied with a lamp.

Now it will be observed that whenever a call is made by a subscriber it lights, first, the line lamp, then the line pilot on the operator's position, also a lamp on the monitor's desk, and sometimes, as explained above, a lamp on the chief operator's desk. This calls for supplying current to 4 lamps for a period of at least 3 seconds, and it is safe to say that, as a rule, the amount of current lost in that period of time is almost equal to the total amount of current used for the conversation, and it therefore represents a considerable loss of current.

Now let us see where this loss may be reduced. First, take the chief operator's desk. No valid reason which can be assigned for placing line pilots on this desk, for, with a monitor's desk and a floor monitor on duty, it is very doubtful whether the chief operator ever pays the slightest attention to the flash of the line pilot lamp. Therefore, these lamps may well be omitted.

Now when we come to the monitor's desk, we find that the line pilots are installed, and, further, that they give but little valuable information to the monitor, for during the very busy period the line supervisory is practically lighted continuously. As a matter of fact, there is very little need for line pilots on the monitor's desk during the busy periods.

When we come to the floor monitor, there is some question whether the line pilot is not of some use to the monitor. The matting of cords may hide the line lamp sufficiently for preventing the line signal to be immediately observed. Therefore, the pilot lamp may be of some use to the floor monitor during the busy periods, and during the "not busy" periods of course there is no floor monitor, the supervision going back to the desk monitor.

Now with repect to the switchboard operator, the same reason, that of matting of cords, may make it necesary to install the line pilot lamp, but during the "not busy" periods, there is no great matting of cords, and therefore the line pilot becomes superfluous.

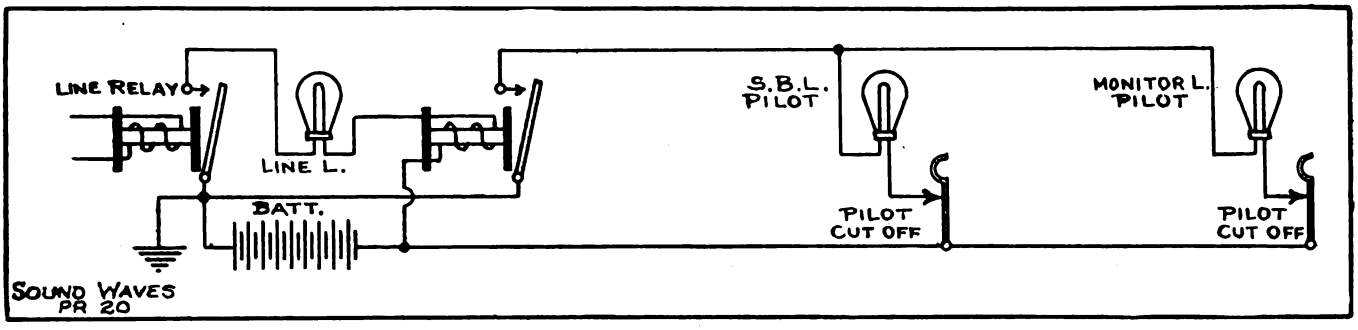

Fig. 2.—Supervisory Pilot Circuit with Cut-Off Keys

In conclusion, the following recommendations may be made:

Wire the switchboard and equip it with an answering cord and a line signal pilot. Equip the monitor's desk with a multiple of the supervisory and line pilot signals. Then arrange the board so that during the busy periods the monitor's desk line pilots may be cut out of service. And, further, that during the "not busy" periods, both the supervisory and line pilots may be cut out of the main board, and the line pilots extended to the monitor's desk. This plan, therefore, during the "not busy" periods, leaves the main switchboard without line or supervisory pilots, and places these supervisory signals on the monitor's desk. That would be the plan proposed for "not busy" periods, and when there is no floor monitor on duty and while a desk monitor is supervising the operators. Now when it comes to giving service during periods where even the desk monitor is not on duty, say during the night, there is absolutely no need for allowing the supervisory or line pilots to operate on the monitor's desk. In other words' the signals may be thrown back onto the main switchboard and then serve some real purpose, for with one or two operators taking care of an entire board, some signals must be provided for permitting them to quickly observe and locate a position upon which either a line call is recorded or on which a connection requires to be taken down.

Finally, the writer begs to point out the fact that

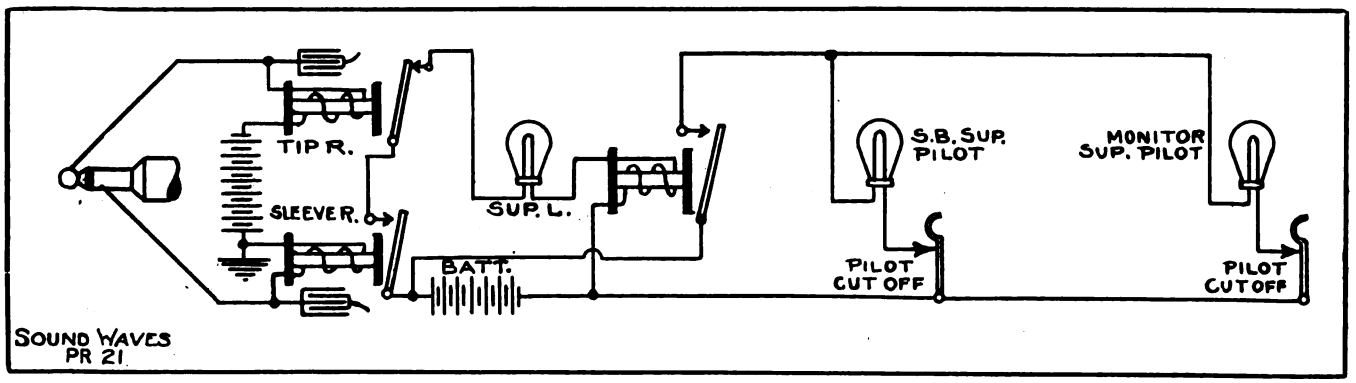

Fig. 3.—Line Pilot Connections with Cut-Off Keys

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an adoption of the plan as outlined will materially reduce the amount of current required for operating an exchange, and apparently without in the least affecting the efficiency of operation.

It should be clearly understood, however, that this discusion of the supervisory and line pilot question is made chiefly from a manufacturing standpoint, and does not necessarily express the opinion which may be held by engineers who have to do with the operating of exchange equipments.

Talks and Queries

The subject of selective party lines is one of the most live questions of today. Mr. Brofos, who presents an article on this topic, has divided the subject into a number of installments, and in order to prepare the reader for a thorough understanding of the fundamental principles of selective party line systems, the first installment consists of a general discussion of currents of different electrical characters. That is to say, the different characteristics of direct currents, alternating currents, pulsating and interrupted currents are described in a thoroughly scientific, and, at the same time, popular manner, and the ten or more illustrations accompanying the first installment of this article have been prepared after an exhaustive study of the question. Every one interested in live questions of the day should not fail to read this article, which is presented elsewhere in this issue under the title "Selective Party Lines."

Under the title of "Telephone Traffic and Recording Ammeters" Mr. Chas. H. Coar has prepared an article which will appear in the January edition of SOUND WAVES.

Every one connected with the operation of telephone exchanges, particularly of the central energy type, will understand that there is a distinct relation between the current consumption of an exchange and the telephone traffic.

In the first installment of his article Mr. Coar first defines what is meant by "telephone traffic," and after describing what a telephone load really is different methods of counting telephone connections are carefully gone into. The first installment is concluded with a general description of load curves as related to the current consumption and general traffic conditions.

A careful reading of the first installment and the succeeding articles will no doubt arouse considerable interest in the question of "telephone traffic" and result in many managers inaugurating some system of studying the operation of their exchanges. And it was with this object in view that the article was prepared.

Every manager who has had to do with the changing of a local battery or so-called magneto manual call exchange equipment to a common battery system, will appreciate the importance of thoroughly discussing all the elements involved in the change over before any work is commenced, for when a shift from one system to another is under contemplation, every department of the company is required to lend its aid in making the change with the least possible interference with the service.

Now when it comes to changing from a local to a common battery, practically everything in the exchange requires remodeling, even the line circuits must receive some attention, for a line which may operate satisfactorily in connection with a local battery exchange system may not operate successfully on the common battery plan.

Having gone through a change-over in a city of over five hundred thousand inhabitants, Mr. C. J. Larsen so thoroughly appreciated the importance of avoiding the mistakes made by him and his associates in handling this problem that he was induced to prepare a series of articles on this subject for SOUND WAVES.

The first installment of this series, under the title of "Changing Manual Call Switchboards to Common Battery" will appear in the January edition of SOUND WAVES. In this installment the general organization of the company's forces will be completely covered, and when it is understood that the article will carry one through from the original organization of the working force to the final introduction of the common battery service, the reader will appreciate that Mr. Larsen's article will serve as a guide to many who are contemplating taking the next step towards the ultimate goal of perfect telephone service.

EDITOR SOUND WAVES: We use a 40 cell, 6 ampere hour capacity storage batery as a source for ringing current in connection with a Sandwich pole changer. Lately, however, this equipment does not supply sufficient current for the simultaneous operation of 2 operators' positions, i. e., while ringing out from the 2 positions over the different lines, there is not enough current to ring the bells on either line satisfactorily.

Another difficulty consists in this pole changer causing the ringer armatures to stick to one side or the other. I also connected an ordinary D. C. voltmeter across the ringing circuit and it gave me a reading of 20 volts. When connected properly should it show any voltage at all?

I may also mention that the batteries have been damaged considerably from overcharging and that the negative plates of the storage batteries show a reddish color nearly all the time, i. e., before the charge as well as after the charge. Would this cause the trouble of insufficient current?

Also tell me how to fix them up, if possible, or will I have to get new plates?

I also have a 28 cell, 16 ampere hour, set of storage batteries which have been overcharged and caused disintegration of the positive plate. So I will probably have to get new ones. Will the old negative plate be all right and have the required capacity when the new positive plates are put in?

1. If the storage batteries which you are using are not in very bad condition, i. e., when the internal resistance is not too high, which would be the case if the batteries have not been maintained properly, the difficulty of which you complain may be due to an improper adjustment of the pole changer contact springs. It may be possible that the contacts are very dirty. At any rate, even with the pole changer springs properly adjusted it is necessary that you install some kind of a limiting resistance between the pole changer and each operator's position. With 2 operators, say you insert in each generator lead where it branches off to the board, a 110 volt, 16 c. p. lamp. With this lamp installed you may even short circuit the ringing terminal in one of the boards and there is not enough current

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lost through the resistance lamp for preventing the second operator from signaling out over a line. You will understand that without a resistance of some kind in the circuit, if the generator is short-circuited at one position, it means that the other position is also deprived of ringing current.

In a general way, however, your question would seem to indicate that the storage batteries are not in proper condition. Install a set of dry cells and observe results.

2. The trouble of which you complain obviously is due to the fact that you have not adjusted the pole changer springs properly. It even looks as though one of the springs is welded fast to the contacts. Or possibly it is crossed with the frame. It is suggested that you immediately examine the pole changer springs and adjust them so that while you have a bell connected across the ringing terminals and when you move the armature of the pole changer from side to side the ringer armature will first go to one side and then immediately reverse and go to the other side.

We do not understand how it is possible that you obtain a reading of only 20 volts across the pole changer terminals when you are using 40 storage batteries for a primary source of power. Why not connect the voltmeter across the batteries and observe whether you get the full 80 volts as you should?

3. You say that the negative plates of your batteries show a reddish color. This does not necessarily indicate that the batteries have been overcharged but it is a more possible indication of your having charged the batteries in the wrong direction.

We should suggest that you connect your voltmeter to the storage battery and determine whether it is not true that the negative plate is not really positive. If the cells have been in this condition for some time we should scarcely dare suggest that they can be put back into good shape. Write the manufacturers of the battery and they will undoubtedly give you the required information.

4. It is noted that you have a 28 cell, 16 ampere hour set of storage batteries and that you think these have been overcharged, causing the positive plate to disintegrate. And you ask whether the negative plate will not be all right if new positives were installed. It is submitted that owing to the suspicion which we have expressed in connection with our answer to question 1, it may be possible that the 28 cell battery has also been subjected to considerable abuse. Observe what color the plates may be, state how long the cell has been in bad condition and then write to the manufacturer of the storage battery, who will be able to give you the proper information.

We can only add that when a storage battery has been reversed for a short time it is generally possible to bring the plate back into condition, and as a general proposition it is also possible to bring back the negative plate if new positives are installed. This is a matter, however, which generally depends on the make of the battery and can be best answered by the manufacturer of the battery.

EDITOR SOUND WAVES: We have some grounded lines running on the same poles for 16 miles. There was a telephone salesman in town several days ago and he said we could transpose these wires and take the cross talk off. I argued against him but he stood firm, so I thought I would settle the matter by asking SOUND WAVES.

Grounded or common return lines can of course be transposed toward each other. Say, for example, you have 6 lines mounted on the same cross arm and running parallel for a considerable distance. Whenever a conversation is passing over the No. 1 wire it can be heard on the No. 2 wire quite distinctly, and less distinctly on the Nos. 3, 4 and 5 wires, and least distinctly on the No. 6 wire. Obviously if you can remove the No. 2 wire from the No. 1 wire to the distance of the No. 6 wire you will have the cross talk reduced. That, however, is not possible if you have only the one cross arm. So the next expedient would be to mix up the six wires so that when you talk on the No. 1 wire you have cross talk on every one of the circuits, and the cross talk is of equal strength. In other words, with six wires on a line the best you can do is to mix up the wires and secure cross talk from all circuits, but not quite so loud as though you were operating the No. 1 and No. 2 wires alongside of each other and obtained the cross talk between these two wires.

You will observe from the above that transposing will not help you much. About the only thing you can do is to keep the most used circuits as far apart as possible. At any rate, if we take two wires there is no conceivable way of transposing these wires towards each other so long as the earth return is used in connection with both wires.

EDITOR SOUND WAVES: Kindly give me the following information in regard to cable work:

Do you think it advisable to bury lead incased cable in the ground with only a board over it to prevent cutting sheath in case you had to dig it up?

If this method is worthy of a trial, would it be better to bury cable 6 or 7 feet deep in order to have it in damp earth so as to allow any currents, that might set up in sheath, to have a free passage from same to the earth?

The earth here is porous sand and ditching can be done rapidly and it does not retain much moisture.

If you are having much difficulty from stray electric currents we should strongly urge that you do not lay the cable in the earth without any protection other than the lead sheath and a board covered over the top. This has been tried in many places, and, while it will serve fairly well in certain districts, it will not serve for any satisfactory length of time in districts where there is any possibility of an electrolytic action.

You state that the cable will be buried in damp earth so as to allow any current set up in it to flow easily into the earth. This, of course, will not do at all. Any current passing through the cable must absolutely come from the outside into the cable. If you allow it to pass from the cable into the ground, and there is any considerable quantity of current passing, your cable would last perhaps two or three months, and under some conditions, not even that long.

New Phone System for Siam

The present system of telephones has proved unsatisfactory in the city of Bangkok, Siam, and a change has been decided upon. The plans, specifications and estimates are now completed, having been prepared by Henry W. Wilder of New York, and are in the hands of the post and telegraph department awaiting examination preparatory to the government appropriation necessary for the work. It is estimated that the cost will be in the neighborhood of $50,000 gold. The c ontract will be let by the public works department.

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Handsome Exchange Building for Detroit

The Home Telephone Company of Detroit has accepted the plans for a handsome exchange building, 100x105 feet in size, which is to be erected on the corner of Madison avenue and John R. street.

The exterior of the building is designed to be finished with terra cotta up to the sills of the second-story windows and to have granite about the main entrance. The second and third stories will be finished on the outside with a red pressed brick and the entire building will be capped with a heavy ornamental terra cotta cornice.

The first story is arranged to accommodate the general manager's office and the various staff employes in the construction and accounting departments, also a directors' room and a large, well-lighted room for the telephone switchboard operators. These rooms are arranged en suite and consist of a large lounging room, dining- room and kitchen, locker room and toilet room. The toilet room on this ffoor, as weell as the other toilet rooms throughout the building, are equipped with the highest class of plumbing fixtures. On the second floor provision has been also made for the long-distance operating room, terminal room and battery room.

The interesting feature of the third floor lies in the fact that it has been entirely given up to the main exchange switchboard operating room and that it is designed to have a lofty ceiling, over 25 feet in height, entirely carried by trusses, thus keeping the operating floor space free from posts or columns. The room is lighted

draughting and engineering departments. The public enter through a vestibule which is furnished with ornamental terra cotta walls and ceiling and with a granite flight of steps. The vestibule opens into a public lobby which will have marble floors and wainscoting and above this lobby the various business offices are conveniently arranged. From the center of the lobby a grand staircase leads to the third story. The staircase is constructed of marble and will have rubber tiling on treads and landings, silence being one of the principal results to be obtained.

Opening from the main hall in the second story are commodious rooms designed for the comfort of the many by a clerestory with windows about the four sides and is provided with a mechanical, fan exhaust system of heating and ventilating. In this regard, as well as in all other details of the construction the Home Telephone Company have spared no pains to have this building as perfect as the best of modern methods and appliances can make it.

This new building will house one of the biggest switchboards ever constructed in this country, the ultimate capacity of which will be 15,000 switchboard lines, with an immediate installation of 9,600 switchboard lines. The immediate and ultimate capacity of the several branch exchanges will bring the total number of

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switchboard lines in the entire system to nearly 40,000 lines.

The plans and specifications for the first three sub-exchanges are of a striking design and will tend to enhance the aspect of things in the localities in which they will be built.

The building as planned represents the very best thought and experience of years in the construction of telephone exchange homes. In preparing the preliminary plans the architects were in consultation with telephone experts from nearly all of the large cities of the country and had the constant advice of Charles H. Ledlie, of St. Louis, the most eminent consulting engineering authority on telephonees in the country, and the actual details were worked out under the eye of Mr. Joseph Lillich, of St. Louis, Mr. Ledlie's representative on the ground.

How to Create a Demand for Securities

BY E. D. SCHADE.

(Address Delivered Before Pennsylvania Independent Telephone Association, at Allentown, Pa.)

We have all heard the telephone exchange manager complain that he does not have sufficient capital at his command to properly develop the business in the territory being operated. There are very few communities

E. D. SCHADE

in the United States that do not have unlimited available capital to develop the telephone needs of each district, if properly managed.

The history of a large percentage of the incorporated companies in this country reveals the fact that they fell victims to a common error at the very start. Usually, after the parties interested in the formation of a new telephone company received the prospectus of the proposed system, they decided that a certain amount of capital would build, equip and operate the plant, which was readily subscribed for by the promoters and persons interested. After operating six months or a year, the management finds that the demands for the service are exceeding their expectations, and that in order to be able to give service to those who apply, it is necessary to extend the lines and increase the facilities in many ways, all of which consumes capital.

In order to meet this demand, he uses whatever funds may be available, thereby keeping his treasury drained all the time.

Your annual statement shows that your first year's operation netted a handsome profit, and you console your shareholders with the fact that, in order to meet the demands for your service, you were compelled to invest the earnings for additions and extensions, and that the book value of your stock is anywhere from 10 per cent. to 20 per cent. above par, and for this reason you cannot pay a cash divident. This report is satisfactory to all concerned, and at the end of the second year you find the same conditions. You again make a similar report.

You now find that your shareholders are not so much enthused over their holdings, and everybody interested begins to realize that a prosperous telephone plant has a voracious appetite for money, and you all wonder when this will ever stop. You continue in this manner from year to year, and you find your treasury constantly drained. You have not created a surplus fund to provide for reconstruction, commonly known as depreciation. Eventually you declare a dividend to the amount of the earnings which you have invested for extensions, etc., but on account of not having paid any cash dividends your stock has no market value, and your stockholders become dissatisfied and lose interest, your plant depreciates, and in many cases is in deplorable condition.

Now suppose you had pursued a different policy. At the end of the first year your statement, as in the first case, shows net earnings anywhere from 10 per cent to 20 per cent., and your original capital all invested. You set aside in a surplus, or reconstruction, fund a reasonable sum to provide for renewals of your property from time to time, and pay the balance to your shareholders in cash quarterly dividends. You issue additional stock to provide funds for the necessary extensions, and you find your shareholders all eager to take up their proportion of the new issue. You now find that your property is earning a handsome surplus annually, out of which you add, from year to year, a sufficient sum to your reconstruction fund to provide for renewals of your plant, and pay the balance to your shareholders in cash dividends. You soon find your stock commands a premium, and is much sought for by investors and business men, each one of whom makes your company stronger and more representative.

I am familiar with the operating and financial details of a property that began operating in 1895, which invested its earnings in extensions, but created no surplus or reconstruction fund. After operating five years the company realized that the entire property had become antiquated, and they must either reconstruct the plant or go out of business. A stockholders' meeting was held, and the final verdict was in favor of rebuilding the entire property, and operating under the "pay cash divi-

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dends and create a reconstruction fund" plan. The first plant showed a net loss in five years of about $52.000. The second plant, after operating five years, is in much better physical condition than when constructed, has been paying handsome cash dividends, has a permanent re-construction fund of $50,000, and the stock, par value $50.00, is in demand at $130.00.

You can readily understand why this property has not depreciated. The book value of this stock is never less than 100 per cent. of the cost of the property, and the market value as much over 100 per cent. as the public will pay premium for the stock.

A Prosperous Michigan Exchange

There is no town in the west which illustrates more clearly what can be done by Independent telephone enterprise than Jackson, Mich. The city has a population of about 27,000, and is a thriving telephone center. The Bell Company is furnishing service to approximately

C. R. KEHOE

2,200 local subscribers, while the Citizens' Company, the Independent organization, has 2,700 local and about 6,000 subscribers in the country.

The Citizens' Company began operation November 1, 1902, with 500 subscribers, but realized at once that by giving the farmers efficient service the company would be able to swell the list of patrons. The territory had never been properly cared for by the Bell Company, and consequently the expectations of the officers of the Citizens' Company were realized quickly, and beyond the most sanguine dreams. Now, within a radius of twelve miles from the city, the farmers are getting direct connection with the city exchange, and this is undoubtedly where the stronghold of the Independents lies.

The Jackson exchange is well equipped and able to take care of the new business that is coming to it every day. Its expansion is due in a large measure to the business methods pursued by C. R. Kehoe, the local manager, who is a firm believer in the value of managerial co-operation and who keeps a watchful eye on the operating and contract ends of the office. By attending strictly to duty he has won the admiration and respect of the business men of Jackson as well as the esteem of those who work under him.

The officers of the Citizens' Company are: President, J. C. Richardson, Jackson, Mich.; vice president, E. W. Barber, Jackson, Mich.; secretary and treasurer, E. B. Fisher, Grand Rapids, Mich.; general manager, C. E. Tarte, Grand Rapids, Mich.

Virginia State Association

The Virginia State Independent Telephone Association was organized at Richmond, Vt., recently. Independent companies from all over the state were represented, animated by the purpose of being brought into closer touch with each other and securing a general betterment of Independent service in all sections. H. E. Bradley, of Philadelphia, secretary of the Pennsylvania State Association, was present, acting in the capacity of representative of the International Association. He made a short but telling speech outlining the objects and policy of the International body, the result of which was that the Virginia Association voted to become affiliated with it.

A permanent organization was effected by the election of the following officers for the ensuing year:

President, Albert Parlett, Bristol.

First vice-president, F. F. Marbury, Alexandria; second vice-president, W. N. McAnge, Suffolk.

Secretary and treasurer, B. L. Fisher, Rocky Mount.

A constitution and by-laws were adopted, and the report of the committee on credentials showed that companies, operating over 10,000 telephones, were represented as follows:

Capital City Telephone Company, F. F. Marbury, Alexandria.

Farmers' Mutual Telephone Company, of Albemarle, T. E. Powers.

Southern States Telephone Company, G. L. Haydn, Norfolk.

Bristol Telephone Company, Albert Parlett, Bristol.

West Halifax Telephone Company, Mr. Ingram.

Franklin County Telephone Company, B. L. Fisher, Rocky Mount.

Chuckatuck Telephone Company, George W. Watts, Suffolk.

Harrisonburg Mutual Telephone Company, W. C. Switzer, Harrisonburg.

Nansemond Telephone Company, W. N. McAnge, Suffolk.

Rockingham Mutual Telephone Company, W. C. Switzer, Harrisonburg.

Floyd County Telephone Company, B. L. Fisher, Floyd Courthouse.

Ohio Telephone Companies Merge

The United States Telephone Company, which is part of the Brailey syndicate, has taken over nine of the largest Independent companies in Ohio, besides securing the control of the Huron County telephone syndicate. The transaction involves an exchange of $1,461,800 of United States Telephone Company's stock, divided into $1,100,000 common and $361,800 preferred, besides other securities. The companies embraced in the merger are: The Columbiana Telephone Company; Findlay Home Telephone Company; Citizens' Telephone and Message Company of Fostoria; Lancaster Home Telephone Company; Massillon, Mansfield, Youngstown, Zanesville and Stark County Telephone Companies. The present deal has nothing to do with the Union Company of New York which is reported to be negotiating for some companies in the state of Ohio.

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Discussion of Taxing Values

The city of Eminence, Ky., by its council enacted ordinances imposing a license fee of $50 per annum upon the business of handling for pay telephone messages in the city, and upon the business of selling railroad tickets in the city or handling freight for pay an annual license of $25. Penalties were provided for carrying on either business without first having paid the license fees.

Suits were brought against the Cumberland Telephone & Telegraph Company and the Louisville & Nashville Railroad Company for violation of the ordinance, and petitions were filed by each for a writ of prohibition to test the constitutionality of the measure. The ordinance was upheld in the lower court, but this has been reversed by the Kentucky court of appeals.

The opinion, by Justice O'Rear, is an interesting discussion of the meaning of the word "franchise," and of taxing values, and, in substance, is as follows:

"Railroad and telephone companies are required to pay to the state a franchise tax, as well as being required to pay a franchise tax to each county, city or town in which it may be exercised, if such municipality imposes an ad valorem tax. These companies are included in what are called 'public service corporations,' exercising powers and having privileges not enjoyed by natural persons or other corporations. The main point of contention is, what is the franchise upon which these taxes are imposed? A corporation's franchise may be one thing or another. The word is not often used with reference to the same meaning. It is sometimes regarded as the mere right to be regarded as a corporation. Again, it is treated as the right to do the particular and peculiar business for which the corporation was created. It is also spoken of as the right to do the business in a certain locality, as, for example, where the constitution requires certain franchises to be sold by cities and towns. The other two quantities of a corporate franchise may have existed before the acquisition of the latter, and are therefore in a sense quite distinct from it. For the purposes of taxation it may be all of them and more. While corporate franchises have long been recognized factors or incorporated beings, they have only recently come to be regarded as separate subjects of taxation. In the rapid development of these artificial creatures of the law (corporations) as means of holding and using property in active business, the corporate franchise has come to have a recognized value of enormous magnitude, when viewed in the aggregate. It is not the least—indeed, frequently is the greater—element of the corporation's wealth. That it should be taxed, should be made to bear its share of the public burden, together with all other wealth, is fundamentally true in justice and in political economy. So far, no exact definition of it has been given upon which the courts have felt willing to finally rest the matter. And perhaps it is well enough for the present that this is so. Still, certain qualities of the corporate franchise are so well known and classified as to be beyond dispute as being elements of its taxable value. The mere right to be a corporation is taxed, in the exacting of the organization tax upon its creation. This is collected once, and absolutely without reference to its property or whether it engages in the business contemplated by its articles. The right of certain corporations to do business in a city, which it must acquire (if acquired since the present constitution) by purchase of the franchise from the city, includes the compensation for occupying the public thoroughfares of the city. But it also may include more than that, which will be further noticed in this opinion. Each of these are qualities of the general corporate franchise. Yet, as used in the taxing statute of this state, the word has a more comprehensive meaning. It is treated as property. It is property. It adds materially to the value of the tangible property of the corporation. The right to exercise the powers allowed to the corporation by law, the peculiar and exceptional privileges it enjoys, partaking partially of the quality of sovereignty, give to its use of tangible property, as well as to its intangible property comprised within its capital stock, a value which otherwise could not attach to them, so that this privileged use becomes to the visible assets of the corporation what the leaven is to the loaf. While it may not be laid hold of separately, it is quite capable of being conceived and valued as a thing worth so much money. This value will depend largely upon its money-earning capacity as it may be employed, and depends at last upon its being exercised. Unless used substantially as outlined in the articles under which it is created, it could scarcely be said to have a money value at all. For, unlike tangible property, or even choses in action, it cannot be sold and trafficked in, nor consumed, nor otherwise enjoyed than in the corporate use of it.

"Railroads are required to pay taxes upon their tangible property. * * * It is to be valued as an entire piece of property 'for the purpose of being operated as a carrier of freight and passengers.' That is, the roadbed, including right of way and tracks, depots, sidings and its cars, equipage and tools, are to be taxed in the aggregate as a railroad. The franchise tax is 'in addition to the other taxes imposed upon it by law,' and is meant to cover all the intangible property of the concern, as represented by the earning value of its capital, employed in the specific business of a carrier of freight and passengers. The valuation of this corporate franchise by the state board of valuation and assessment is made the basis for municipal taxation in every municipality in which the corporate franchise may be exercised. In the present case it is conceded that the railroad company's franchise was so valued and was certified as apportioned to the city of Eminence and the franchise tax paid thereon for the year in controversy. The power given to municipal corporations to impose and collect license fees upon all franchises, is a revenue measure. It is so treated in its classification by the constitution, and though in the statute it is coupled with other matters more properly coming under the head of police powers, it is in its scope and effect still an act to raise revenue for the town in one of the ways permitted by the constitution. For the city it is contended that the franchise tax which is collected from the railroad company under the general assessment of its franchise, being a property tax, is quite distinct from the occupation tax, which the town, under the legislative authority, has imposed. But it is not. It is the same thing; at least, the franchise tax includes the valuing of the capital stock of the railroad when and in the event only it exercises the very privileges sought to be taxed again by the ordinance. The same property may be indirectly and incidentally taxed twice is con

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ceded, as, for example, where the owner of mortgaged land pays taxes on it, and the owner of the mortgage pays taxes on the evidence of the debt. But it is not the policy of the state to tax the same property twice as against the same owner. The constitution requires that taxes shall be uniform upon all property subject to taxation. If the same property were taxed twice for the same purpose as against the same owner, whereas other property was taxed but once for that purpose as against its owner, the taxation would not be uniform. It would violate not only the letter of the constitution, but that spirit of absolute equality before the law which is at the bottom of all free government. The owner of other tangible property in Eminence is not taxed on the privilege of employing it in a certain business, either directly or indirectly, when it is assessed ad valorem. Therefore, when they are required to pay an occupation tax, as they have no franchise to be taxed or which is taxed, the license fee which they pay is not duplicate taxation in any sense.

"Railroad property has always been regarded as an entirety in this state for the purposes of taxation. It is made the subject of special consideration by the present constitution, which directed that until changed by legislation the mode of taxation then in existence should prevail. No such change has been indicated, save as taxation of its franchise. General terms, not necessarily indicating a departure from a long settled policy of taxation, which is, indeed, continued in the present statutes, will not be deemed as applicable to the policy, where it appears that they were not used in special connection with the subject of such policy, but were employed broadly, so that they embrace many other matters coming within their meaning, and can be applied only inferentially to the particular subject. * * * If so radical a change in the existing and long-continued policy of the state to tax such properties as entireties, and not fragmentarily, had been contemplated by the legislature, it would not have undertaken to make it in such an obscure way as this. It was not contemplated by the constitution that the legislature could authorize a city to tax the same privilege twice for the same year as against the same owner. The railroad operated in Eminence is a part of the company's system. It no longer has an option whether it will continued to carry freight and passengers to and from that town. It is bound to do it or forfeit its charter. Never before has it been thought that the state could require its creatures under such severe penalties to do a service, and then put it in the power of a part of the state government to keep them from doing it.

"THE TELEPHONE CASE involves substantially and in the main the same question discussed above. In addition, it appears that the city of Eminence some few years ago offered for sale for a term of twenty years the franchise to erect, maintain and operate a telephone exchange and to do a telephone business in that city. The Cumberland Telephone & Telegraph Co., being an accepted bidder, bought this privilege for the price of $50 per year, payable annually. In addition it furnishes the services of two instruments and the use of its poles for certain purposes to the city free of other charge. Under this agreement the plant of the company was installed. It is since that agreement that the ordinance in suit was enacted. The court is of opinion that, after having sold the telephone company the privilege of putting up and operating its line and conducting its business in the town, the municipality cannot afterwards, without the consent of the telephone company, impose an additional charge for the identical privilege. This franchise sold by the city to the telephone company was the creature of the city. It was not only to occupy its streets, the consideration being compensation for right of way, but it was for operating its exchange in the city and receiving tolls thereat upon its business. It was that or nothing. The city could not impart to the telephone company any corporate quality. That it already had, or must get from the state. The ordinance selling the franchise by its terms went further than to grant the right to occupy the city streets and alleys. It expressly dealt with, and sold for a consideration, the privilege of doing the identical business within the city that it is doing. We concede that if it should be necessary, in the fair exercise of its police power by the city, to compel the telephone company to conform to some different plan of conducting its business, or even that it should be excluded altogether, if it were such a business as was deleterious to the health or safety of its citizens, the sale of the franchise would not preclude the city in the matter, for it is beyond the power of a municipality, or of the state itself, for that matter, to bargain away its police power by contract."

Cumberland Telephone & Telegraph Co., 90 S. W. 594.

Independents Control Nebraska

The Western Telephone Company, Lincoln, Neb., has recently completed a connecting line to Falls City and Humbolt, thereby completing a No. 10 copper circuit between Lincoln and Kansas City, St. Louis and intermediate points. A line has been strung between Council Bluffs and South Omaha, connecting the Independent telephone systems of Iowa and Nebraska. some 300,000 phones. The line to Kansas City connects the Independent systems of Nebraska, Kansas and Missouri. Council Bluffs is now connected with Sioux City, St. Paul, Minneapolis, and a large portion of South Dakota. The toll lines in this section has developed more in the past year than in any three years previous. Two years ago there was no group of 'phones in Nebraska that could talk to more than 5,000 other telephones, but today the 45,000 Independent telephone patrons in Nebraska can talk with over 200,000 connections in their own and adjacent states. An Independent franchise has been granted in the city of Omaha, which has been the stumbling block for Nebraska Independents, and the officers of the Nebraska Association feel that at last they have won the fight for supremacy in their s tate.

Three Independent Victories

On November 6 the citizens of Omaha, Neb., and Denver, Col., voted on the question of granting telephone franchises to Independent companies. In both cities the Independents won—in Omaha at the ratio of almost 2 to 1. The Omaha franchise was granted to the Parmele-Heim-Pollock syndicate, the Denver franchise to the Automatic company. On November 12 the Milwaukee city council granted a franchise to the Independent company represented by H. D. Critchfield, president. Thus within one week the three great cities of Milwaukee, Denver and Omaha have been wrested from the Bell monopoly, in spite of the most bitter and unscrupulous opposition and the most lavish expenditure of money. All of which goes to show that the American people are beginning to learn that monopoly is a bad thing for them and a worse thing for their children.

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Recent Telephone Patents

No. 833,159. Relay Attachment and Alarm for Telephone Systems. England.

Taking the well known tubular drop, attach a right angular piece of rubber tipped metal to the armature and arrange so that the insulated end of the extension of the armature touches a pair of insulated springs, and you have the invention before you.

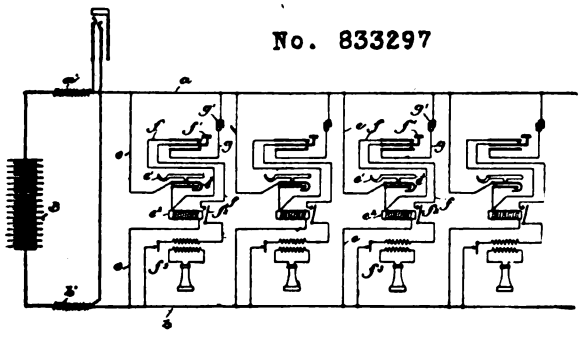
The particular object of this design is to permit of giving intermittent signals from one of the often many parties connected to a farm line telephone circuit. Thus providing a means for permitting an operator of the switchboard to determine that when some one on the circuit rings, "dash, dot, two dots and dash," or any other desired combination of signals, it is not a call which requires the operator's attention.

No. 833,279. Telephone Receiver. Albright.

This invention is a reversion to the old type of single pole receiver surrounded by a tubular shell of steel; thus producing what the inventor claims to be an ideal form of magnet for telephone receivers owing to its acting symmetrically on the diaphragm. While there is nothing new in this particular feature, the entire system of magnets and receiver coils is adjusted towards the diaphragm in such a manner as to prevent the evil effects of contraction and expansion.

No. 833,297. Lock-out System for Party Line Telephones. Bruce.

When two or more telephones are connected to a telephone line one subscriber may call the central office; and, while speaking, the remaining subscriber on the party line may, as is well known, come in on the circuit and listen to the conversation. The inventor has



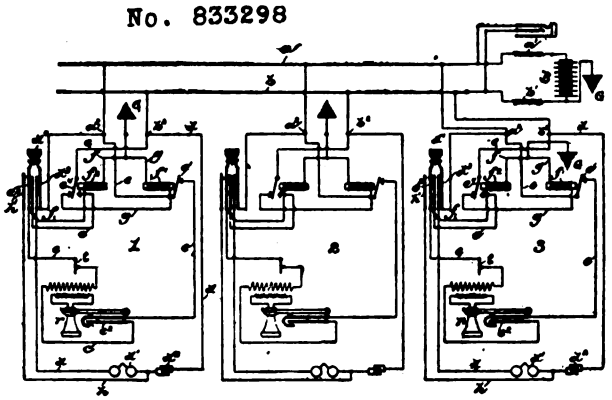
endeavored to overcome this practice by providing means at the subscriber's station for preventing more than one party on the line coming in on the circuit without obtaining the co-operation of a second party on the same line.

When subscriber A removes his receiver from the hook switch, a relay in his telephone draws up its armature and closes the talking circuit. If immediately after another subscriber should remove his receiver from the hook switch, it is claimed that enough current flows through the A station for preventing, say, the B station relay from obtaining sufficient current for drawing the relay up. And therefore every station outside of the A station is locked out. Upon having accomplished this result, the inventor finds that two parties on the same line may still be upon sufficiently good terms for wanting to speak with each other, and in order to permit of accomplishing this requirement, a push button is provided at the A station and so arranged that after A has called the central office and arranged for signaling the B station, the push button at A is depressed until the subscriber B is heard to respond. Now, while holding down the A push button, the relay is kept drawn up, but the talking circuit is cut out. So, then, the B station relay does draw up. And then the inventor claims there is enough current for holding up the relays and to supply talking current for both stations.

Necessarily, the relay adjustments should be quite marginal.

No. 833,298. Lock-out System for Party Line Telephones. Bruce.

Reference has already been made to a patent by the same inventor. The chief differnce between this inven-

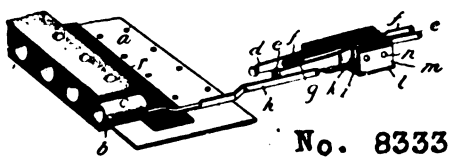


tion and the one previously mentioned lying in the adding of one additional relay in each substation and a few extra contacts on the push button. It will be observed that this system calls for the normally grounding of the tip side of the line through one of the relays in each station connected to the line.

No. 833,390. Special Jack for Telephone Switchboards. Holmes & Craft.

Whenever spring jacks are assembled in close proximity to each other it is very important that the adjustments of the springs be as nearly alike in the different units as it is possible to make them. With bridging jacks, that is, where there are no resting contacts, this does not present a difficult problem. However, when every spring of the jack is provided with normally resting or normally open contacts, it is quite a problem to adjust the different springs so that all jacks may be alike.

In the invention under consideration the unit feature of the construction has been adopted. Each of the 4



springs has been assembled in a small unit metallic frame structure, and it is so arranged that this structure may be slipped into place on the frame of the jack and fastened into position by means of screws passing

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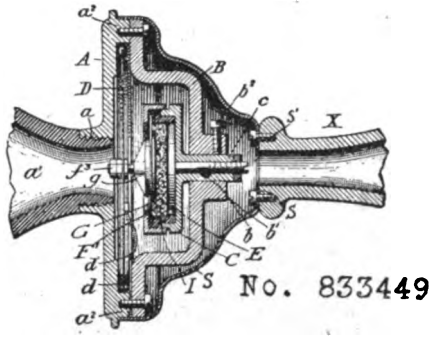
through the bottom plate of the frame into the bottom plate of the unit structure.

It will be observed that while the test spring of the jack is normally left in the frame, the tip and sleeve springs may be removed on the order of the well known unit types of self-restoring drops.

No. 833,449. Telephone Transmitter. Duvall.

Telephone transmitters galore have been invented. This particular invention is aimed at providing a means for permitting the rear electrode to be adjusted towards

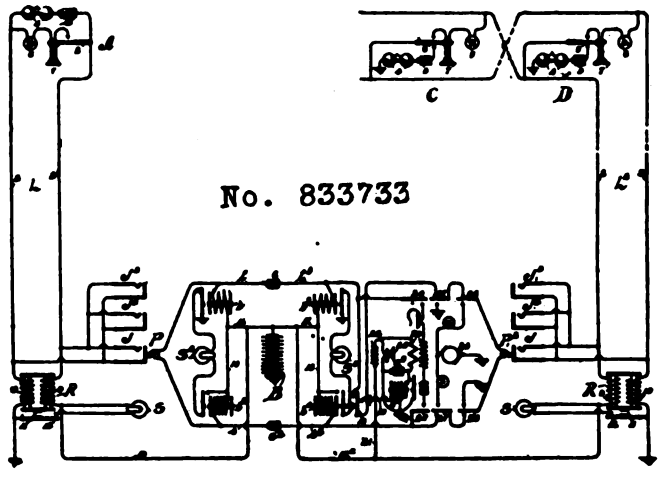


the front electrode. While this instrument is of the solid back construction, it is claimed that the necessity for expert labor in selecting the mica disks on which the front electrode of some types of transmitters is mounted, is obviated by using an aluminum auxiliary diaphragm.

No. 833,733. Telephone System. Dean.

In the design of switchboard systems there is a constant tendency towards reducing the number of parts. The usual practice in common battery switchboards is to have a line relay and a cut-off relay. Thus, there are two relays required for each line circuit, and incidentally 3 wires are required for the multiple cable for connecting each line circuit to the switchboard circuit.

Mr. Dean's invention is aimed at producing a single relay system, and also in producing a system in which



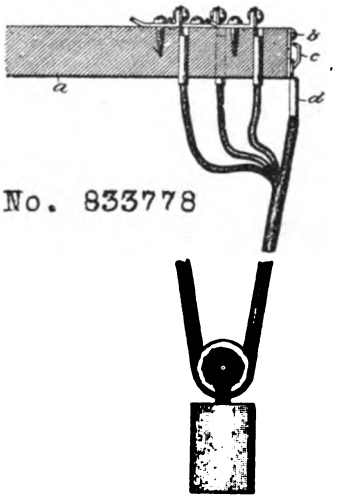
only two wires are required for connecting the line circuit to the switchboard positions. This is accomplished chiefly through the peculiar construction of the combined line and cut-off relay. As shown by the illustration, two windings are placed on the relay. One is a low resistance winding and the other of a comparatively high resistance. The turns of the two windings, however, should be equal. Now when a subscriber removes his receiver from the hook switch the armature of the relay is attracted with equal strength by either of the two pairs of the relay magnets, and the line lamp is lighted. Now when a connecting plug is placed into the spring jack, a low resistance relay in the cord circuit connects itself in multiple with the high resistance winding of the line relay. This robs the line relay of some of its current and permits the low resistance winding of the line relay to exert a maximum attraction on the armature pivot, and results in the line lamp being extinguished. It will be observed while facing the drawing that the outside heavily drawn winding is of low resistance. The successful operation of this invention undoubtedly will depend on the construction of the line relay.

No. 833,745. Telephone Transmitter Arm. Loff.

This is an invention along the lines of reducing the cost of manufacturing, also, incidentally, reducing the weight of the arms which it is necessary to provide for supporting telephone transmitters. In the present invention the arm is made of a formed up piece of sheet metal. At the junction point between the arm proper and the escutcheon plate the usual bolt and nut is provided for holding the arm in any desirable vertical position.

No. 833,778. Fastening Device for Switchboard Connecting Cords. Craft.

The cords used in switchboards for interconnecting service, are, as a rule, screwed fast to connectors on the rack in the rear of the cabinet. If the cord were not held by the braid around the conductors all of the strain



occasioned through using the cord would come on the conductors. Therefore, it is the usual practice to run the covering braid out a few inches and to tie the cord up in such a way that all strain may be removed from the conductors.

There are different methods of doing this. In the present invention a metal strip having tongues stamped out from its body and which are made to form hinges, extend outwardly and turn back toward the strip. These hinges being adapted for receiving the eyelets which are fastened to the braided extension of the body of the card.

No. 831,855. Telephone Transmitter Arm. Guttman.

In the construction of transmitter arms there is a constant tendency towards producing an arm which may

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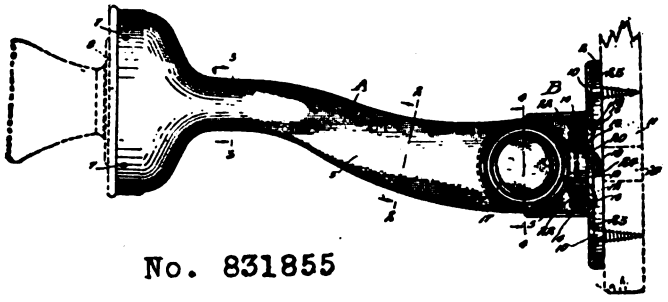
be stamped out of one sheet of metal. In the present instance the entire arm, including the back cup or transmitter holding cup is formed out of one piece. This makes an excellent form of construction, and it is prob-



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ably only a matter of using and maintaining suitably designed tools for producing a very satisfactory form of construction.

One of the special features claimed for the invention is that no adjusting screws are necessary for holding the arm in its vertical position, the friction joint being made use of. Provisions are made for increasing or decreasing the amount of friction at the pivot joint.

No. 831,889. Telephone Attachment. Patterson.

Although it has the appearance of a "germ killer," this invention is not of that kind. It is merely directed at providing a method for preventing noise or conversation from passing over a telephone when it is undesirable to pass a conversation over the line. The invention consists of providing the mouth piece with a hood which hood is then further supplied with a sliding disk with which an opening in the hood may be covered or uncovered.

The Interstate of New Jersey

The organization committee of the Interstate Telephone Company of New Jersey, whose property and assets were recently sold under foreclosure sale, has reorganized the company under the name of the Interstate Telephone and Telegraph Company of New Jersey. The following directors were elected for the ensuing year: Hon. W. S. Hancock, Trenton, N. J.; A. J. Bakewell, New York; John Markle, Jeddo, Pa.; Robert E. Wright and Charles West, Allentown, Pa.; G. U. Reichard, Wilkesbarre, Pa., and H. S. Swartz, Trenton, N. J. The latter will be president and general manager of the company. The Interstate is an Independent company operating in New Jersey. It has 8,000 subscribers, with exchanges at Trenton, Atlantic City, Elizabeth, Patterson, Passaic and 25 or 30 smaller towns. The company has a large amount of cash in the treasury and steps will be taken at once to largely increase the facilities in all the towns in which it operates and to unite them by means of modern long distance toll lines. The company is separate from but will work in harmony with the Consolidated Telephone Company's lines in Pennsylvania.

Uniform County Rates in Mississippi

Enforcement of the order which was issued by the Mississippi railway commission last July, providing for free conversation between all telephone stations in the same county on payment of a prescribed maximum rate has created a great deal of interest in this matter. The text of the rule is a follows:

"In any county in this state where there may be one or more telephone exchanges, same shall on the request of the patrons and subscribers be connected so that the subscribers in each may have connection and service from all exchanges and telephones in such county upon the following terms: Any subscriber who desires free service to all exchanges and with all subscribers in their respective counties, other than the local exchange with which he has connection, may secure same by paying the published monthly rental which might be demanded by an exchange where the number of telephones in use equaled the total number of telephones in use in all exchanges in such county as follows:

"Where the total number of telephones in said county is less than 600, the monthly rental of all desiring free service in said county may be not more than:

Business, direct line	$2.75
Business, two party line	2.00
Residence, direct line	1.65
Residence, two party line	1.40

"Where the total number of telephones exceeds 600 but not 1,000, the rates may be not more than:

Business, direct line	$3.50
Business, two party line	2.50
Residence, direct line	2.00
Residence, two party line	1.50

"Where the total number of telephones exceeds 1,000 but not 2,000, the rates may be not more than:

Business, direct line	$4.00
Business, two party line	3.00
Residence, direct line	2.50
Residence, two party line	2.00

"All subscribers who do not request and desire such free service and county connection shall be charged only the rates authorized by this commission and now in force for local service, and for long distance such toll rates as are approved by this commission."

Vienna Policemen Carry Telephones

A pocket telephone for police purposes is probably the most novel adaptation of invention in this particular field. It is to be seen in daily practical working in Vienna, and perhaps in Vienna alone of the great cities of the world. In the Austrian capital, however, the system is universal, and every police officer on duty is provided with the necessary appliances. In every street of importance in the city special call boxes have been placed, and every officer on duty having occasion to communicate with his station has only to pull out his pocket apparatus, adjust it to the wire in the box, and communication at once is established. As a method of summoning aid in all but petty cases, the system seems to have many advantages over the whistle.

Mighty Lively Little Animal

A Chicago telephone salesman who spent part of last summer in good old Missouri, says that one day while he was in a drug store in a town on the Hannibal & St. Joe road, for the purpose of buying a cigar (the town being a strong prohibition center), a good-natured German entered, his face fairly beaming as he walked into the shop. The first thing that caught his attention was an electric fan buzzing busily on the soda counter. He looked at it with considerable interest and then turned to the clerk. "Py golly!" he exclaimed, smilingly, "dat's a tam'ed lifly squirrel vot you got in dare, ain't id?"

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Personal and Field Notes

DOMINION OF CANADA.

A TELEPHONE FRANCHISE has been granted to the Stark Telephone, Light and Power System, Toronto, by the council of Niagara Falls, Ont.

THE RATE PAYERS of Yorkton, Sask., have voted the sum of $90,000, a part of which will be used to equip and operate a municipal telephone system.

AT JORDAN, ONT., C. Wismer, Alonzo Culp and Alexander Troup have organized the Niagara District Telephone Company, with a capital stock of $10,000.

THE ALBERTA GOVERNMENT, following the example of Manitoba, has engaged the service of a telephone expert to spread the gospel of provincial and municipal ownership of telephones.

A COMPLETE TELEPHONE SYSTEM is being constructed in the Doukhobor colony of Western Canada. The colony contains 22 villages of which Verigen, where the main exchange is located, is the center.

ONE OF THE PROSPEROUS EXCHANGES in the province of Alberta is that of the Western General Electric Company, Red Deer, Alb., managed by a son of John T. Moore, the noted West Canadian orator.

AT WATERFORD, ONT., the Norfolk County Telephone Company has been organized, with a capital stock of $40,000. The temporary officers are: President, E. S. Barber; vice-president, S. L. Squire; secretary and treasurer, James Ross.

PLANS HAVE BEEN COMPLETED for the new central exchange of the municipal telephone line at Edmonton, Alb.

GREAT PROGRESS is being made by the Revelstoke, Trout Lake and Big Bend Telephone Company, whose headquarters are at Revelstoke, B. C.

THE CAPITAL STOCK of the New Brunswick Telephone Company will be increased from $600,000 to $2,000,000 to enable it to acquire property and franchises of the Central Telephone Company, Madawaska Telephone Company, Chatham Electric Company and the Miramichi Company's exchange in Newcastle district.

THE EASTERN STATES.

THE MIDDLETOWN TELEPHONE COMPANY has been incorporated at Harrisburg, Pa., with a capital of $20,000. B. F. Meyers, of Harrisburg, is president.

THE MUTUAL TELEPHONE COMPANY, Erie, Pa., is putting up an addition to its exchange equal in size to the present building and has increased its capital from $150,000 to $200,000.

THE PEOPLE'S TELEPHONE COMPANY, Butler, Pa., will issue bonds for $50,000 for the purpose of improving its already profitable system. The entire issue will be absorbed by the stockholders of the company.

THE UNITED MESSAGE COMPANY, Albany, N. Y., has assumed control of the Commercial Union Telephone Company, which operates exchanges in the counties of Warren, Rensselear, Saratoga and Washington, N. Y.

JOSEPH A. JONES, 158 Water street, New York, and others have incorporated the Zanzibar Telephone Company for the purpose of operating telephone lines in East Africa. The initial capital of this unique enterprise is to be $5,000.

THE FEDERAL TELEPHONE COMPANY, a New Jersey corporation, has made a contract for the sale of all of its assets and is going out of business on or about the first of the year. The securities held by the Federal were taken over by the Brailey and Everett-Moore syndicates.

THE APPELLATE DIVISION of the New York Supreme Court has unanimously affirmed a judgment of $5,000 against the Empire State T. and T. Company in favor of Joseph R. Fitzgerald. The latter was given a verdict for $5,000 for injuries received by a fall from an alleged defective telephone pole. The case was originally tried at Auburn, N. Y.

THE AUTOMATIC TELEPHONE COMPANY, New Bedford, Mass., has voted to increase its capital stock and to replace its present equipment with new apparatus.

CONSIDERABLE BUILDING is being done by the Black River Independent Telephone Company, Pulaski, N. Y. A line has just been completed to Syracuse and five rural lines are in operation. A new toll board and power generator have been installed, under the direction of the local manager, Fred A. J. Dunwick.

F. E. EBERSOLE, formerly of Lincoln, Neb., now is manager of the Northeastern Telephone Company, Portland, Me., one of the largest Independent systems in New England, with exchanges in Portland, Lewiston, Auburn, Livermore Falls, Wilton, Farmington, Well, Dixfield, Rangeley, Belgrade Lakes, Lisbon, Lisbon Falls and Gorham.

THE CITIZENS' TELEPHONE COMPANY, with headquarters at Laconia, N. H., now has exchanges at Laconia, Tilton, Franklin, Meredith and New Hampton, and toll connections with several Independent companies. It has 2500 instruments in use and a capitalization of $100,000. A. W. Abbott is president and W. B. Johnson manager of the system.

REPORTS FROM MARSHFIELD, Mass., state that wireless telephony has entered into the deep sea fishing industry. Experiments have been conducted by the wireless telegraph station at Brant Rock, which is equipped with a wireless telephone. Recently, it is asserted, the fishermen in a vessel similarly equipped wished to learn the price ruling in the Boston market. They called up Brant Rock, asked the price of fish in Boston and promptly received the desired information.

THE SECRETARY OF STATE of Connecticut reports the incorporation of the Porto Rico General Telephone Company, with an authorized capital of $100,000; business to begin with $1,000. The company proposes to operate telegraph and telephone lines in the island of Porto Rico. The incorporators are Frederic Culver, of Hadlyme, Conn., Granville Whittlesey, of Greenwich, Conn., and Generoso Candina, of San Juan, Porto Rico.

CENTRAL STATES AND MIDDLE WEST.

THE CAPITAL STOCK of the Ohio River Telephone Company, Rising Sun, Ind., has been increased from $4,500 to $75,000.

THE ENTIRE BUSINESS of the South Lyon Telephone Company, South Lyon, Mich., has been sold to the Livingston Home Telephone Company, Howell, Mich.

THE DAVIS TELEPHONE COMPANY, Davis, Ill, now has connection with the city of Rockford and expects to connect with Brodhead, Wis., in the near future.

MANAGER A. J. VERNIER states that the Independent telephone company of Kankakee, Ill., now has 1,500 telephones in operation in the city and 1,900 in the county. Instruments are being installed at the rate of 30 to 35 per month.

THE HEALTH AUTHORITIES of Indiana have considered carefully the agitation as to the danger of the telephone as a carrier of disease germs and come to the conclusion that the danger is so comparatively unimportant as not to warrant any action looking to an improvement along sanitary lines.

THE CITIZENS' TELEPHONE COMPANY, Grand Rapids, Mich., has constructed a copper line from Traverse City to Elk Rapids and from Traverse City to Kalkaska. An additional thousand switches have been installed in Grand Rapids. General Manager C. E. Tarte is to be congratulated upon his wonderful success.

THE FIGHT AGAINST GAMBLING which has been carried on by the Chicago police for some time resulted in a unique discovery the other day when in the home of Fred Decker, a hand-book maker, a telephone was discovered in a stove with connecting wires through a bed spring. The police searched for evidence against Decker for some time, but did not find it until they opened the stove and examined the bed.

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THE HOME TELEPHONE COMPANY, Champaign, Ill., has increased its capital stock from $100,000 to $200,000.

LEO R. BRAND and other enterprising citizens of Highland, Ill., have incorporated the Farmers' and Merchants' Telephone Company, with a capital of $15,000.

EUGENE J. BURNS, for the past three years manager of the Union Electric Company's offices at Rock Island and Moline, Ill., has resigned his position on account of ill health.

AT EFFINGHAM, ILL., the Central Illinois Long Distance Telephone and Telegraph Company has been incorporated by B. W. Kerr, C. E. Munday and T. C. Dore, with a nominal capital of $2,500.

THE COUNCIL OF CHARLESTON, ILL., has granted a twenty-year franchise to the Citizens' Mutual Telephone Company. A clause in the ordinance prohibits the transfer of the grant to any other company.

THE CITIZENS' TELEPHONE COMPANY, Terre Haute, Ind., has cut over its lines to its new exchange recently installed with a full central-energy multiple board. The capacity of the new plant is 5,000 lines.

JAMES B. BRAILEY, JR., of Toledo, O., has succeeded Harry S. New as president of the Indianapolis Telephone Company and as vice president of the New Long Distance Telephone Company. Mr. New will continue as director in both companies.

THE BUSINESS AND PLANT of the old Dunlaps Telephone Company, with headquarters at Goshen, Ind., have been taken over by the Dunlaps Mutual Telephone Union, a mutual concern operating in Concord and Harrison townships.

FRANK ANDREWS, of Woodburn, Ind., has been appointed Indiana representative of the Antwerp Telephone Company, an Ohio corporation which is extending its lines into Indiana. The company is said to have $20,000 invested in Indiana property.

THE BRYAN TELEPHONE COMPANY, Bryan, O., has effected a consolidation with the exchanges at Williams Center, Mark Center, Farmer, Sherwood and Ney. Extensive extensions and improvements are planned. The consolidation gives the Bryan company control of a system with 1,400 instruments.

THE CITIZENS' TELEPHONE COMPANY, Grand Rapids, Mich., in its new directory has the desirable feature of having the names listed numerically as well as alphabetically. This is the first instance in which such an arrangement has been used in the Independent field in a large city. The enterprise of the Citizens' Company is to be highly commended.

THE CHICAGO TELEPHONE COMPANY has won a victory in a recent decision by Judge Windes that a subscriber has no right to attach private extension apparatus to the company's main lines. The court held that a company has the right to control its own system and that the attachment of private apparatus might interfere with the service of other subscribers.

THE LOCAL TELEPHONE COMPANY, Bellevue, O., has created a new office, that of general superintendent, and has given the post to W. W. Libhart, local manager at Norwalk. H. R. Sykes, former manager at Plymouth, has succeeded Mr. Libhart at Norwalk. The Local Company has 11 prosperous exchanges and 265 miles of toll lines. Its efficient president is Frank A. Knapp.

THE PENNSYLVANIA COMPANY has installed a mile of cement telegraph poles at Maples, Ind. The poles are from 25 to 30 feet long, 9 inches at the base and 6 inches at the top, octagonal in shape from the base. The poles weigh about 2,500 pounds. At the top of the poles are holes for the reception of rods to hold the cross arms.

A SERIES OF PROFITABLE MEETINGS has just closed in Ohio. The various districts affiliated with the State Association discussed subjects of local and general interest. Addresses were delivered by President Beam, J. S. Brailey, Jr., and other state leaders. The report showed that much had been accomplished along the line of standardization. An increase of 50 per cent. was shown in long-distance efficiency, and greater improvements were promised for the immediate future.

THE SOUTH.

S. M. REDBURN has purchased the telephone plant at Commerce, Texas, and will conduct it as a private enterprise.

EXTENSIVE IMPROVEMENTS, including the equipment of a new exchange, have recently been made by the Rock Hill Telephone Company, Rock Hill, S. C.

AT PRAIRIE GROVE, ARK., an Independent telephone company has been incorporated by E. G. McCormick, W. T. McCormick and M. M. Collier. The authorized capital is $6,000.

GEN. W. H. McGRATH, of Dallas, Texas, is securing the right of way through Texas for long distance telephone lines which are ultimately to reach from New York to the City of Mexico.

SEVERAL NEW TOLL LINES are being built by the Brownsville Telephone Company, Brownsville, Texas, the most important being a line from Santa Maria to Lansboro, thence to Hardingen.

AT EMPORIA, VA., the Meherrin Valley Telephone Company has been organized, with a capital of $5,000. H. L. Taylor is president; F. T. Fox, secretary and treasurer, and B. P. Woodard, manager.

THE HOME TELEPHONE COMPANY, Hattiesburg, Miss., now occupies new headquarters in the Progress building, and has completed the installation of its new equipment. The company has close to 1,000 city subscribers.

BUSINESS RATES have been advanced from $1.50 to $2.00 per month and residence rates from $1.00 to $1.25 by the Wadesboro Telephone Company, Wadesboro, N. C. Connection has just been made by the same company with a number of outlying points.

THE WESTERN TELEPHONE COMPANY, Big Springs, Texas, is expending $50,000 in the extension of its copper metallic toll lines and in renewing the equipment of its various exchanges. The capital stock of the company has been increased from $60,000 to $120,000.

JUDGE GEORGE C. MERRICK, presiding over the Prince George's County (Md.) Circuit court, has rendered an opinion that telegraph and telephone companies have no right to erect poles along highways without the consent of abutting property owners. The case will be carried to the court of appeals.

THE RECEIVERSHIP PROCEEDINGS in the case of the Territorial Bank and Trust Company versus the Commercial Telephone Company have been ended by the court dismissing, at their request, the defendants' cross bill. The Commercial Company owns the Independent long distance lines in Texas. Its headquarters are at Austin.

THE CUMBERLAND T. AND T. COMPANY has applied to the United States courts at New Orleans, La., for a restraining order to forever enjoin the state railroad commission from enforcing its recent order making reductions in long distance toll charges. The company claims that the rates fixed by the commission are unjust, unfair and unreasonable.

AT HUNTSVILLE, ALA., a verdict for $6,000 was recently returned in the United State court in the case of Ed Daugherty against the Southern Bell T. and T. Company. The plaintiff was injured on a pole, losing an arm and sustaining other injuries as the result of coming in contact with a live wire. The question at issue was whether or not the telephone company had, in equipping the pole on which plaintiff was hurt, observed the common law which requires the master to provide a working place of reasonable security for his servant.

WEST AND NORTHWEST.

THE NEBAGAMON TELEPHONE COMPANY, Nebagamon, Wis., has increased its capital stock from $5,000 to $10,000.

THE MUTUAL TELEPHONE COMPANY, Nevada, Iowa, has been making many improvements of late and has built several new toll lines.

AT LIVINGSTON, MONT., the Home Telephone Company has been organized by J. S. Haley, Alex. Livingston, John M. Seaman, Dr. R. D. Alton, W. B. Doherty, Dan Allen and

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H. J. Miller. J. S. Haley, an experienced telephone man, will be the manager. The capital of the company is $60,000.

LOCAL CAPITALISTS have organized the Pierrepont Telephone Company, Pierrepont, S. D., with a capital of $10,000.

SEVERAL NEW COUNTRY LINES have recently been opened by the Fox River Valley Telephone and Telegraph Company, Green Bay, Wis.

THE CENTRAL TELEPHONE COMPANY, Rockwell City, Iowa, is erecting a fireproof exchange building. It will be two stories, 40x40.

THE CAPITAL STOCK of the Cannon Valley Telephone Company, Waterville, Minn., has been increased from $50,000 to $100,000. Numerous extensions will be made.

HORACE F. MANN has been granted the privilege of establishing and operating a telephone exchange in the city of Brainard, Minn., for a period of twenty years.

M. H. DRIFTMIER, formerly manager of the Farmers' Mutual Telephone Company, Clarinda, Iowa, now is in charge of the Independent Mutual Telephone Company, Shenandoah, Iowa.

THE BROOKLYN TELEPHONE COMPANY, Brooklyn, Wis., recently has added several new lines to its plant and put in many new telephones. C. H. Walker is manager of the company.

THE MANKATO TELEPHONE COMPANY, Mankato, Minn., is making radical improvements in its system at Rapidan and its long-distance service is being extended in every direction. M. W. Koons is manager of the system.

THE SUIT FILED against the Tri-State Telephone Company, St. Paul, Minn., by C. R. Parmalee who wanted the modest sum of $10,000 for injuries alleged to have been received May 24 by coming into contact with a live wire was decided in favor of the company.

THE OFFICERS AND DIRECTORS of the Door County Telephone Company, Fish Creek, Wis., have decided not to renew their contract with the Wisconsin Telephone Company, which expires January 30, 1907, and will install their own switchboard and telephones. Roger Eatough, of Bailey's Harbor, Wis., was elected manager of the company.

A REPORT RECENTLY ISSUED by the Executive Council of the state of Iowa shows that the Bell and allied companies have 38,836 exchange, rural and toll line instruments in use in that state against 184,489 instruments used by Independent and rural companies. Iowa has 21.9 per cent. of all rural telephones in the United States.

A DECISION HAS BEEN RENDERED by Judge Watts prohibiting the Northwestern Telephone Company from installing a local system in the city of Thief River Falls, Minn., under its present charter. The company had entered mandamus proceedings to prohibit interference on the part of the city with construction work. The court ruled in favor of the city on all points involved.

THE STANDARD TELEPHONE COMPANY, Waukon, Iowa, now has over 300 miles of toll lines in Northeastern Iowa and Southeastern Minnesota and 350 miles of farm lines. Most of these lines were originally built with oak poles which are being replaced with cedar as fast as possible. The exchanges are also being improved. In spite of Bell competition the company has more business than it can properly take care of. E. Orr is superintendent of the Standard system.

A STRONG COMPANY has been organized by the farmers of Ida county, Iowa. It is called the Ida County Farmers' Mutual Telephone Company, with headquarters at Ida Grove. Sixty miles of poles have already been put up and another forty miles is to be put up before the ground freezes. Free exchange will be given to all towns in the county. Robert H. Todd, Galva, Iowa, is secretary of the company.

LOCAL BUSINESS MEN have bought the Cooperstown (N. D.) telephone exchange and county lines, together with the Binford exchange and rural lines, from A. Goff. The system will be improved and extended.

DR. LATHROP, OF TAMA, IOWA, has purchased the Toledo (Iowa) telephone exchange from W. C. Fider and will give his personal attention to its management.

A TOLL LINE HAS JUST been built between Wilton and West Liberty, Iowa, by the Wilton and West Liberty Telephone companies, each company building half way.

WEST AND SOUTHWEST.

IMPORTANT IMPROVEMENTS are planned by the County Line Telephone Company, Miltonvale, Kas.

THE OLUSTEE TELEPHONE COMPANY has been organized at Olustee, Okla., with a capital of $5,000.

A NEW TELEPHONE COMPANY has been organized at Cortland, Neb., by Dr. E. E. Aukes and others.

THE HOME TELEPHONE COMPANY, Bruning, Neb., has recently been extending its lines in every direction.

THE PAOLA TELEPHONE EXCHANGE, Paola, Kas., has been incorporated, with an authorized capital of $25,000.

THEODORE COOPER has purchased the Stockton (Kas.) telephone exchange and rural lines connected with it for $9,000.

THE INDEPENDENT COMPANIES of Lewis county, Mo., will be merged into one strong organization, with uniform charges and equipment.

THE VIRGINIA TELEPHONE COMPANY, Virginia, Neb., recently purchased a new switchboard and is making other important improvements.

THE HOME TELEPHONE COMPANY, Springfield, Mo., expects to have its model new system completed and ready for service by May 1, 1907.

THE LIBERTY TELEPHONE COMPANY, Liberty, Neb., has placed an order for a new switchboard and other material and will modernize its plant in every department.

THE CORTLAND TELEPHONE COMPANY, Cortland, Neb., has been organized with the following officers: President, F. A. Burling; vice president, G. H. Dietz; treasurer, Ira Bonebright; secretary, H. E. Tweedy.

THE PROPERTY AND FRANCHISE of the Citizens' Telephone Company, St. Joseph, Mo., has been purchased by A. A. Goddard, of Topeka, Kas., and Theodore Gary, of Macon, Mo., who will rehabilitate the plant and put it on a paying basis.

THE DILLER TELEPHONE COMPANY, Diller, Neb., will build a modern exchange at Harbin, Neb. Switchboard and telephones have already been ordered. The company operates a system of 500 telephones, with exchanges at Lanham and Harbin.

WILLIAM DRUMMOND has severed his connection with the Albion Telephone Company, Albion, Neb., and removed to Lincoln where he has secured a position as electrician and assistant in the electrical laboratories of the University of Nebraska.

THE CITY OF DENVER, COL., lays claim to the distinction of having the largest per capita number of telephones of any large city in the United States. With a population of 200,000 it has approximately 20,000 telephones, or one instrument for ten people.

THE INDEPENDENT telephone plant at Leavenworth, Kas., which recently passed into the hands of the People's Home Telephone Company, a Delaware corporation, is to be rebuilt throughout. The erection of a new building, to cost $20,000, has recently been started. W. T. Hewitt, of Leavenworth, is president of the company; A. B. Conklin, of Aurora, Ill., treasurer and superintendent of construction; William George, Aurora, Ill., vice president, and L. R. Parker, secretary and general manager.

THAT A TELEPHONE COMPANY is liable for the negligence of its operator in reporting a fire alarm was decided in

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the United States court at Chickasha, I. T. Mrs. M. E. Tripp sued the Pioneer T. & T. Company for $125 because of a delay by the central operator in reporting a fire that destroyed a barn on her premises a short time ago.

PACIFIC COAST STATES.

J. E. McGILLIVARY, district manager of the Pacific States T. and T. Company at Walla Walla, Wash., has tendered his resignation, to take effect January 1. He intends to remove to Seattle where he will take up telephone engineering and construction.

MILTON W. PHILLIPS, Ventura, Cal., is the inventor of an arrangement by which the supplementary circuit at any sub-station renders inoperative the talking circuit of such station when any other talking circuit of an instrument on the line is being operated.

CONSIDERABLE EASTERN CAPITAL has been invested in the Deschutes Telephone Company, Deschutes, Ore., which operates quite an extensive system in Central Oregon. The new officers are: President and treasurer, W. E. Guerin; vice president, E. B. King; secretary, R. D. Wickham.

CERTIFICATE OF THE CREATION of a bonded indebtedness has been filed by the Union Home Telephone and Telegraph Company, Los Angeles, Cal. The capital stock of the company is $10,000,000 and the bonded indebtedness $10,000,000. The Union Company now has acquired most of the Independent home telephone companies in Southern California.

FARMERS AT OAKESDALE, WASH., south of Spokane, rejected a proposition to join the rural lines with the Pacific States Telephone & Telegraph company, and this resolution is now being generally circulated. "We, the undersigned subscribers and owners of the rural telephone lines centering in Oakesdale, do hereby agree that we will not enter into any contract with any long distance telephone company."

PALOUSE, WASH., south of Spokane, with nine rural telephone lines, has been the center of an interesting fight between the Pacific States Telephone & Telegraph company and the Interstate Co-operative Telephone company for more than a year, the result being that the business is split. The switching the first three months will be done in the Pacific States office and the next three months in the Interstate, and so alternating through the year.

THE FARMERS' UNITED T. & T. COMPANY, financed by Walter and Albert Higgs and Anton Kramer of St. Andrews, Wash., has asked the commissioners of Douglas county for a franchise to build a line from Coulee City, 100 miles north and northwest to enter the towns of St. Andrews, Jean, Mansfield, Bridgeport, Mold and Heahy. If the farmers' lines join the company will have a complete service by Independent 'phones reaching all over Douglas county.

THE EMPIRE CONSTRUCTION COMPANY began work on the Spokane (Wash.) Home Telephone company's lines Nov. 5 and it is given out that work will be pushed. The company has 3,000 poles in the yards ready for installation in the outskirts of the city. The wires in the business districts will be put underground. Contracts for the excavation of the Home building in Howard street, to cost $60,000, have been awarded, and it is expected that work on the foundation will begin early in December, the purpose being to have the structure completed in May, 1907. The main building will be 71 by 100 feet, three stories and a full basement. The building will be of re-inforced concrete with terra cotta trimmings. Albert Held is the architect.

E. A. KLIPPEL, superintendent of telegraphs on the Harriman system in Oregon and Washington, is making a series of experiments with train telephones, the purpose being to devise a plan whereby the conductor will be able to converse with any one in any part of the train from the engine cab to the sleeper. It is also purposed to install the service on freight trains. The telegraphone was worked successfully a few days ago on a distance of 200 miles and gave satisfaction. The test was made from a freight caboose during the early morning hours when no train orders were being sent over the wires in the regular way.

M. A. PHELPS, president and treasurer of the Interstate Telephone Company, Spokane, Wash., announces that the $400,000 added to the capital stock of $100,000 will be used in building operations in Spokane, the completion of the exchange at Coeur d'Alene, Ida., the building of the extension of Wallace, Ida., and the completion of the toll line into Spokane. The last named line is now within a mile of Spokane. One hundred thousand dollars of the increased capital of $400,000 was subscribed at the meeting on the evening of Nov. 2, when the stockholders expressed themselves in favor of pushing plans for the invasion of territory in Oregon and Idaho, as well as in eastern Washington.

THE CAPITAL STOCK of the Interstate Telephone Company, Spokane, Wash., is to be increased to $500,000, which will be used in building extensions. M. A. Phelps, president of the company, announces that already 250 miles of line is in operation and that lines will be pushed into various parts of Washington, Oregon and Idaho. An exchange is to be established in Spokane, which will probably be headquarters for the company.

JAMES A. ALLEN, a grocer at Wallace, Ida., east of Spokane, Wash., lost a bunch of money a couple of days ago because of delay in getting connections with a jobbing house in Spokane. He put in the call early in the morning, the purpose being to place an order for 30,000 pounds of sugar. Though he tried at least a score of times during the day to have the Rocky Mountain Bell company get Spokane the operator was unable to make connections until late in the afternoon, when Mr. Allen was advised by his dealer that the price had advanced 10 cents a hundred pounds.

PRESIDENTS AND OTHER OFFICERS of Independent telephone lines at Garfield, Silver Creek, Crabtree, Cory and other points west and south of Spokane, Wash., are denouncing the Pacific States Telegraph and Telephone company for attempting to absorb their lines and five towns will be cut out of the Pacific States service in October. William Lawrence, one of the wealthiest farmers and stock raisers in the Palouse country, scored the company in the newspapers and has since then received a letter from the management of the big concern saying that the interview put the Pacific States people in the light of highway robbers. Mr. Lawrence intimates there will be somethin' doin' just as soon as he can issue his statement, replying to the manager's letter.

Switchboard Language Trimmed

"Hello" and "please" no longer have places in the vocabulary of the operators in the employ of the Pacific States Telephone and Telegraph Company; in fact, the language of the switchboard has been trimmed to such phrases as "number," "there is no one on the line" and "they don't answer." No longer will the girls at the board tell the time of the day, or give the subscriber any information as to the location of the latest fire, nor will they be permitted to ring the bell in the morning to awaken the early riser. Several yards of red tape have been added and in the future if a subscriber wants any information he is turned over to the "hospital board," where the "nurse" will try to answer the questions. The peek-a-boo waist is also under the ban, the regulation uniform consisting of a black waist without any frills or furbelows. Any old kind of a skirt will do. Don't blame the girls; they are simply obeying orders.

Wood-Testing Laboratory

The importance of studying the question of wood preservation is beginning to be recognized by lumbermen, foresters and users of ties and poles, and a meeting is soon to be held at Washington, under the direction of the Forest Service of the Agricultural Department, to consider plans for the securing of an adequate wood-testing laboratory. Such a laboratory, if established, would open the way to large economy in the utilization of wood, and have a wide field of usefulness in solving the problem of wood supply which is now puzzling telephone and railroad men.

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BULLETIN NO. 5

ILLINOIS INDEPENDENT TELEPHONE ASSOCIATION

EDITORS

This Bulletin is edited by the publicity committee of the Bssociation. All communications intended for it should be addressed to J. H. Hackett, chairman, Jacksonville, Illinois.

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UNIQUE TELEPHONE SITUATION

In the province of Manitoba at this time is being carried on one of the most unique campaigns in the history of telephony or that of any other utility. The provincial government enacted a law last May providing that the provincial government might acquire, construct and operate long distance lines in the province and also empowering it to acquire, build and operate exchanges in the three principal cities, Winnipeg, Portage Le Prairie and Brandon. The act also provides that municipalities, including those of Winnipeg, Portage Le Prairie and Brandon may acquire and own telephone exchanges. The act also enables the provincial government to guarantee the payment of such bonds of the various municipalities as may be issued for their building or acquiring such telephone exchanges, provided the provincial authorities shall be satisfied with the plan proposed by the several municipalities respectively.

On Wednesday, November 8, a convention of the Union of Municipalities of Manitoba was held at Portage Le Prairie at which were present delegates from practically every municipality in the province. The day was given over entirely to the consideration of telephone matters. By invitation of Mr. Dagger, the expert employed by the provincial government, I delivered an address before the convention depicting to it something of the conditions existing in the parts of the United States with which I am familiar. I was greatly impressed with the intense interest manifested by these representatives of the several municipalities, but more than all was I impressed of the absolute unanimity of opinion regarding the municipal ownership and operation of telephone systems. During the entire three days' session of the convention not a single voice was heard in opposition to the principle of municipal and provincial ownership of this utility. The only question upon which any division occurred was that of the particular plan by which this end should be obtained, a few contending that the plan outlined by the government was not the best that could be devised. After a full and most interesting discussion, however, a resolution was adopted recommending to the voters of the province the adoption of the government's plan by the decisive vote of eighty-nine to sixteen. Until the vote shall be taken upon the question by the electors in the different municipalities, on December 11, the government proposes to carry on a campaign of education to place within the reach of every voter such information as may lead him to an intelligent understanding of the benefits to be derived from municipal and governmental ownership of this great utility. The progress of this campaign and the ultimate outcome thereof will be watched with fascinating interest not only by the Independent telephone companies of the United States, but also by others interested in the question of municipal ownership and control of public utilities. I may say, however, that I believe it altogether possible that a man may be in favor of municipal ownership in Canada and consistently be opposed to the same in the United States.

In my humble judgment, Manitoba affords an ideal condition for the establishment of municipal telephone plants. And it would appear that the people of the province are decidedly of the same opinion. That the Bell Company are thoroughly aroused as to the situation is more than manifest by the fact that they have some half dozen of their best men on the ground seeking to create dissension among the advocates of municipal ownership, and to bring such other influence to bear as may tend to stem the tide which has so strongly set in in opposition to monopoly. The Hon. Mr. Roblin, the premier, Hon. Colin Campbell, attorney general of the province, and other leading officials have the matter in charge. They are splendid types of progressive statesmen, and are very greatly assisted by Mr. Dagger, who is probably the best informed telephone man in the world. It would appear that the outcome of the campaign admits of very little doubt, notwithstanding the known methods of the Bell Company to thwart the will of the common people.

In my judgment the monopoly will find there, as in the United States, that when the people speak it is with authority born of the power to do. I congratulate the Independent companies of the United States upon the fact that they have in the provincial government of Manitoba such a powerful ally in the fight they are waging in behalf of the common people of this continent, and I confidently predict a triumph of their efforts so overwhelming in its nature as to for all time make it impossible for monopoly to exist in Manitoba in the telephone business.

C. B. CHEADLE.

CALDWELL'S ATTACK ON LATZKE

The open letter of James E. Caldwell to Paul Latzke, published in the September number of the Cumberland Telephone Journal, is one of the most scandalous productions ever put in print.

No respectable journal could consistently publish *all* the letter contains—in fact respectable journals published wholly or partly in the interest of the Bell Telephone Company have had a sufficient sense of propriety to

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omit the most scandalous and outrageous parts of Mr. Caldwell's letter. The letter is too lengthy to publish in full, but the least objectionable parts can be found in the many journals sent broadcast over the country under different names, but all emanating from one general source, the literary bureau of the so-called Bell Telephone Company.

One of the paragraphs left out by the decent publications is the following: "It appears in this record that you are not a native of this country. Evidently you left your own country for its good. It is quite plain that you are a part of, and bred from that cracked-brain class, as your name clearly implies, which have come to these shores represented by Czolgosz and Guiteau—you appear as a natural partner in the firm of 'Czolgosz, Guiteau and Latzke.' The senior members of the firm, Czolgosz and Guiteau, enact their crimes in the open and take their chances; whereas you have borrowed the livery of heaven under which to operate your miserable game. By adroit innuendo, stabbing character and defaming honorable men in a shameless, cowardly manner, this band of 'buzzards' pose as patriots—called to right the wrongs of the people; and while engaged in its 'calling' is working them in this stock jobbing swindling operation which is being carried on under the cloak of this 'Independent' Telephone Association, which, as I have stated heretofore, has for its object nothing less than the manufacture of a lot of water-logged, inflated securities to palm off on unsuspecting, innocent people."

It seems that Mr. Latzke was called as a witness in a case in court at Nashville, Tenn., between the Home Telephone Company and the City of Nashville, where the evidence given seemed not to suit Mr. Caldwell. Generally speaking, the court and jury determine the value of the evidence given by witnesses, but in this case it seems that the gentleman representing the Cumberland Telephone Company takes it upon himself to act as judge, jury and executioner.

"Whom the Gods would destroy they first make mad."

The above quotation sounds like the spluttering of a madman. Comment on such stuff is wholly unnecessary. The letter speaks for itself.

Mr. Caldwell says he has been in the telephone business 23 years. Evidently it is time for him to retire and give place to some one who can, at least, write a decent letter. Connected as he is with the so-called Bell Telephone Company, he seems to have absorbed, to the point of intoxication, the old idea that the Independents have no right to exist, that the telephone business is the exclusive right of the Bell people.

We are impressed that the character of Mr. Latzke has not suffered very much by this vituperative screed of Mr. Caldwell. Such things as these hurt the old companies rather than the Independents—Caldwell's reputation rather than Latzke's.

Caldwell says that Latzke uttered "a most contemptible and unwarranted falsehood," when he testified that "no matter how far a man is removed from Boston he must abide by the rules and regulations laid down in Boston."

Now it is well known that the Boston company owns 52.09 per cent of the stock of the Cumberland Telephone Company, the affairs of which Caldwell probably imagines he controls. The presidents of these subsidiary companies may think they are driving, but President Fish of the American Telephone and Telegraph Company has hold of the lines all the time.

If Mr. Fish chooses to let the little fellows think they are in full control of those local organizations that is his business and no concern of ours, but to brand as false and malicious the statement made by Mr. Latzke in face of the well-known fact that the Boston company owns and controls the majority of the stock of all these subsidiary companies, including the Cumberland, all over the country, is puerile and unworthy of any one holding so important a position even as the presidency of a local telephone company.

In the last number of SOUND WAVES we made mention of the fact that the hardest rap the Bell Telephone Company ever had was the series of articles written by Mr. Latzke, published in that most respectable and reliable periodical, the "Success Magazine" of New York. The endorsement of the publishers of Success is not given without due consideration and when they say that Mr. Latzke is an acknowledged expert in telephone matters it carries such weight as to greatly overbalance anything that may be said by those interested on the other side, especially those intrenched behind 23 years of servitude to one of the most despotic corporations of modern times, one that vainly imagines that it has certain God-given rights which the "common herd" must take notice of and keep out of the way of, or get run over by that erstwhile great crushing grinding juggernaut of the telephone world, the Bell Telephone Company.

Illinois Telephone Man Honored.

B. F. Wasson, president of the National Telephone and Electric Company, Clinton, Ill., has accepted an invitation to deliver a lecture on the "Evolution of the Telephone" before the students of Purdue university, Lafayette, Ind. It will be remembered that Mr. Wasson had the evolution of the telephone at the world's fair at St. Louis, where he was awarded the gold medal and diploma. He has donated his collection to the university for a period of ten years.

Before engaging in the telephone business Mr. Wasson was a prominent educator who left the impress of his school work upon the living generations of several western states, and it is not surprising that he is being honored now by the most eminent scholars of the country.

He brought the same thoroughness to the telephone business which distinguished him in his educational work, and it is not surprising that he has made the National Telephone and Electric Company a success. Among the latest improvements of that company is the stringing of 20 wires from Clinton west, some of which will be used as trunk lines to Kenney, Waynesville, Blason and Lincoln, some for the grain men and the balance for farm lines. All will be full metallic. The company is also carrying 10 wires toward Lane and Meldon. At present the company has over 2,000 telephones and 4,000 miles of wire.

A 100,0000 Volt Experimental Line.

In a recent number of the Electrical World, Mr. K. Wernicke describes an experimental line for carrying a current much higher in voltage than any which has thus far been used commercially. The idea was to demonstrate whether much higher voltages are commercially possible. A short line was built in the open air where it would be subjected to all kinds of weather conditions and on this line the current was switched.

The pressure was increased gradually until it reached 100,000 volts. At 40,000 volts there was a perceptible corona about the wires, and a humming sound was heard, showing there was a discharge of electricity into the air.

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At 100,000 volts everything connected with the line was surrounded by light.

The test showed that it is perfectly feasible to carry currents of the above high voltage. It is likely that other conditions might arise in practice that would hinder the transmission of such current pressures over long distances, such as dirt and moisture on the insulators and excessive leakage through the atmosphere. So far as the test was concerned it showed that it is possible to get fairly continuous results under conditions that closely approached commercial usage. During the test there were both rain and snow storms and these did not affect the results in the least.

American Telephone and Telegraph Company

The directors declared October 2 a quarterly dividend of 2 per cent., which places the stock on an 8 per cent. basis, against 7½ per cent. heretofore. This will mean an additional annual disbursement of $682,757 on the outstanding capital stock of $136,551,400.

This 7½ per cent. dividend was inaugurated January, 1901, in form of a regular quarterly dividend of 1½ per cent. and ¾ per cent. extra in January and July.

The company's statement on this increase from 7½ to 8 per cent, says it was fully justified, notwithstanding the increased cost of operation, which is to-day the greatest in the history of the company. We believe that in view of this, and also of the growing competition, this dividend increase would have hardly taken place had the company not disposed of $100,000,000 convertible bonds, for which a market has to be created.

The highest price the stock has ever seen was 186, in 1902. The highest price this year was 144⅝, last January. The dividend increase has not helped the stock, which shows the great distrust of the public in public utility stocks.

The convertible bonds are selling on the Boston Stock Exchange at about 94. Of the $100,000,000 convertible bonds so far very little has found its way into investors' strong boxes.—*Financial World.*

It would seem by the above that the great efforts put forth by the American T. & T. Company—alias the Bell—to discredit the securities of the Independent companies has reacted on that company and has caused a distrust of its own securities as predicted in a former number of SOUND WAVES. It is well known, outside of Boston and New York, and a few other cities, that the Independents are gaining ground faster than the old company; and when investors investigate, which they seem to be doing now, they will not take the bait offered them even if sweetened by an advance in the dividend rate on the stock of the American T. & T. Co., largely held, by the way, by the Mackay Companies of Boston. Monopolies are doomed. The people have so decreed. The sooner the Bell managers get on to the situation (especially in the West), the better it will be for that company.

The Financial World is a reliable authority on financial matters and can be depended on to state facts correctly and without prejudice one way or another.

THE TREMONT INDEPENDENT COMPANY, presided over by Walter Ames, is fast coming to the front. He is making many important improvements which will add very greatly to the other Independent exchanges in that part of the state. Mr. Ames has had a peculiar trial in his territory in the form of a sublicensee company known as the Tazewell County Telephone Company, which owes its existence to the Central Union Telephone Company. The farmers have been induced to take blocks of stock in this company under the pretext that it was an Independent company. The struggle is a hard one, but the Independents are holding down the enemy.

Important Pennsylvania Decision

The supreme court of Pennsylvania in the suit of Delahunt versus United Telephone & Telegraph Company, has affirmed the decision for the plaintiff. The following are points of the decision: (1) Where a person was killed by an electric current from a telephone on his premises, the rule "res ipsa loquitur" applies. (2) It is the duty of a telephone company to see that no deadly current passes over its wires, and it is its duty to keep the same properly insulated so that no accident would occur, if it came in contact with a wire dangerously charged. (3) In an action against a telephone company to recover for death of plaintiffs' father while using the telephone, where he was instantly killed on taking the metal transmitter down, plaintiffs were required only to show in the first instance that their father was killed by an electric shock while using the instrument furnished by defendant telephone company to him as a subscriber. (4) Evidence in an action to recover for death of telephone subscriber, killed while attempting to use instrument furnished, held not to show defendant guilty of contributory negligence. (5) In an action by children to recover for the death of their father, where the court instructed that if they could recover, the amount of the verdict would have to be limited to compensation to them for loss of what they could have expected from him for their support and education during their minority, a remark of the court that one of the plaintiffs being a deaf mute, the father might have been liable to contribute more to such child's support than he ordinarily would. is not ground for reversal. (6) Where there is evidence of an effort to subpœna a witness, it is within the discretion of the trial court whether his testimony at a former trial shall be admitted in evidence.

Bright Outlook for U. S. Company

The board of directors of the United States Independent Telephone Company held a meeting at Rochester, N. Y., recently for the purpose of considering matters in connection with the securing of a loan. The board is composed of the following gentlemen: George Eastman, Hiram W. Sibley, James S. Watson, Walter B. Duffy, Eugene Satterlee, Edward Bausch, T. W. Finacune, Lee Benoist, George R. Fuller, Arthur G. Yates. Morris D. Knapp, Henry A. Strong, John N. Rauber. John C. Woodbury, Frederick W. Zoller, and J. Wesley Kingston, of Rochester, N. Y.; Adolphus Busch, Breckinridge Jones, August Gehner and Herman Stiefel, of St. Louis; Joseph J. Heim and O. C. Snider, of Kansas City, Mo.; Hendrick S. Holden of Syracuse, N. Y..; James B. Hoge, of Cleveland, O.; William H. Page, of New York, and H. A. Bingham, of Jersey City, N. J.

Unique Silver Telephone Set.

When the young Spanish queen, who is a British princess, recently returned to Madrid, she was presented with a magnificent silver telephone set, the wedding gift of the officers of the telephone company. The telephone consists of three pieces. The base is in Louis XV. style, and surmounted by the columns of Hercules, at the feet of which is sitting a small boy holding the Spanish arms. He is in telephonic communication with an English girl, beside whom crouches the British lion. On the top of the columns a Renaissance arch supports two Cupids who hold the transmitter.

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BULLETIN NO. 2

PROVINCE OF MANITOBA TELEPHONE NOTES AND COMMENTS

Persons interested in the Telephone situation in the Province of Manitoba should address MR. F. DAGGER, Provincial Telephone Expert, Parliament Building, Winnipeg, Man.

Subscriptions and advertisements should be sent to SOUND WAVES, 860 Monadnock Bldg., Chicago, Ill.

NATIONALIZATION OF TELEPHONES

It is urged in certain quarters as a reason why the municipal electors should vote in the negative upon the question of public ownership of the telephone service that there is a possibility of the federal government nationalizing the whole telephone service. If such a contingency were at all probable, which it is not, the writer believes that such a policy would prove a serious matter for the telephone users of the Dominion.

While government ownership of the long distance service is an ideal condition, both in regard to efficiency and economy of service, the federal ownership of the local telephone exchanges would retard, rather than assist, the general development of the service. It would be an impossibility for the Dominion government to devise a system having its base of control in Ottawa which would furnish a local telephone service satisfactory to the individual needs of every city, town, village and rural district in the Dominion.

It is perhaps just at this point, more so than at any other, where the Bell Telephone Company have failed, and will continue to fail, to meet the requirements of the local telephone service. The marvelous success of the Independent telephone movement in the United States is almost entirely due to the fact that the local exchanges are owned by the people residing in each locality, and this is particularly so in the case of the small towns, villages and rural districts. It does not require much reasoning to arrive at the conviction that the people get more satisfaction out of a service owned by the municipality, or their fellow-citizens, than they would out of one owned and operated by gentlemen residing in Montreal, Boston and New York, who are only interested in the people's dollars.

While state ownership of the long distance lines is a right course to pursue, it is equally certain that anv policy which has for its object the ownership and operation of the local exchanges by the Dominion government would result in failure. Furthermore it is extremely doubtful if a federal-owned long distance telephone system covering the whole of Canada and controlled from Ottawa would furnish a service as adequately adapted to the requirements of the people in all parts of the Dominion as that which would be provided by a series of provincially-owned systems controlled by the people of each province.

Those who object to the provincial government's telephone policy and hint at a remote possibility of the Dominion government acquiring the whole telephone service of this country are, however, willfully deceiving the people. The telephone clauses in the amendment to the Railway act dealing with telephone matters, passed last session by the Dominion government, to which reference has been made, were drafted by Hon. Charles Fitzpatrick, late minister of justice, and referring to this legislation in the house of commons, on March 28th last, that gentleman said:

"So far as I am concerned, I look upon the telephone at the present time as being essentially requisite to our modern civilization. It is as necessary, it seems to me, under existing conditions, almost as water and light, and in that view it is important that we should make provision for as effective control over telephone companies as we can have consistent with private ownership, and I think myself that private ownership, with effective government control, is an ideal system."

Mr. Fitzpatrick was succeeded as minister of justice by Hon. A. B. Aylesworth, erstwhile counsel for the Bell Telephone Company, and the following are a few of that gentleman's sentiments upon the telephone question, expressed during the Dominion telephone inquiry:

"A private act of parliament is, as all our judges tell us and as every person who thinks about the matter must see, in reality nothing less than a contract with parliament; a contract between the company that may be brought into being by it and the public, the people of the country as represented by their legislature. And what is the proposal, if I understand the suggestions that have been made here, it is simply that after some twenty-five years of experience under the contract, one party should, against the wish of the other party to it, take away from that other party a part of the consideration or the reasons which have induced the party that has acted upon that contract for that period of time to invest his money in it. This is a pretty serious proposition, as I said, and a proposition that if any one thought about it he would hardly be willing to entertain.

"Mr. Aylesworth—I think there are some members of the committee who would agree with my views, at any rate, that a municipal service is an unmitigated nuisance to the citizens and an unmitigated loss.

"Mr. Bergerson—And if the trunk lines belong to the government?

"Mr. Aylesworth—If the trunk lines were under different control I should think we would have confusion worse confounded."

And again during the inquiry the following was recorded:

"Mr. Aylesworth—We are serving the greater public when we are serving our own subscribers than if we were serving some farmer who has built his independent line to connect with ours.

"The Chairman—If it were not for the farmers your company would not amount to much."

It is reasonable to assume that the statement referred to by Mr. Fitzpatrick was made with the approval of the government of which he was a member, and it is equally certain that the government which invited Mr. Aylesworth to become one of its members were not in ignorance of that gentleman's views upon the telephone question and were therefore in sympathy with those sentiments.

In the face of these facts the public are justified in asking those who counsel delay in supporting the provincial legislation to give some more tangible reason for such delay than has yet been forthcoming.

How long are the people to wait, and in the event of their doing so, in what manner will their patience be rewarded. We believe the people will realize that every day's delay is strengthening the grip of the Bell monopoly on Manitoba, and will take the earliest opportunity to release themselves from that grip, by building and operating their own telephone service.

BELL TELEPHONE TACTICS

Anyone who has followed closely the history of the Bell Telephone company for the past few years cannot fail to notice the many and varied methods adopted by that corporation in its efforts to blindfold and mislead the public. Wherever it has been possible, it has never failed to take advantage of local conditions by employing certain conflicting elements, either in political or municipal life, to do the fighting with weapons and ammunition supplied by "Bell" emissaries, while that corporation has concealed its hand and remained in the background.

The latest method adopted by this company is an attempt to introduce a political issue in connection with the vote to be taken at the next municipal elections upon the question of public ownership of the telephone service. An article, anonymous as usual, appeared in the Manitoba Free Press, which compensated its readers for what it lacked in logical argument by the liberal amount of space, which it occupied. We have not the least doubt that if this criticism of the recent telephone legislation could be traced to its source, it would be found to be the work of one of the legal retainers of the Bell Telephone Company.

Whether this supposition is correct or not, the Free Press may as well remember that the telephone question is not, and never can be made a political issue; and any party that allows itself to be persuaded that this important problem can be settled

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on party lines, is forging a weapon which sooner or later will be turned against itself.

The only two factors in this question are, the people and the Bell Telephone Company, and it is useless to disguise the fact that those who seek to place difficulties in the way of the people securing their own telephone service at cost, are the enemies of the people, and are working solely in the interests of the monopoly. In plain language, the Bell Telephone Company knows that its one chance of salvation from an overwhelming vote in favor of public ownership of the Manitoba telephone service lies in a "forlorn hope" of creating a political faction by raising the issue of federal versus provincial and municipal ownership of the telephone service. The company is equally opposed to both of these policies and cannot openly support either of them; therefore it employs the Liberal press to oppose the provincial legislation by holding out the probability of the Dominion government nationalizing the whole telephone service of Canada.

The Free Press knows that the chances of the Dominion parliament, as at present constituted, nationalizing the telephone service are just about as remote as annexation with the United States. The recent telephone inquiry at Ottawa brought out the fact that there are too many senators and members interested in the welfare of the Bell Telephone Company to justify the hope that any effective legislation will ever be placed upon the statute books of the Dominion which will weaken the monopoly enjoyed by that corporation and the provincial companies in which it has a stockholding interest.

The late postmaster-general, Sir William Mulock, was undoubtedly the strongest man who ever held office in the Laurier administration, and had the reputation of making a success of everything he took in hand. In response to the universal demand of the public for relief, he took up the telephone question as a champion of the people against an arrogant and aggressive monopoly, only to find himself deserted by his government, with the result that his retirement and the appointment of the Bell Telehone Company's leading counsel as his successor speedily obliterated the cherished hopes of the people, who had been foolish enough to believe that their rights were more important than the vested interests of a semi-foreign monopolistic corporation with an unlimited treasury at its command for lobbying purposes.

The federal government has, with no uncertain sound, rejected the demand of the people for nationalization of the long distance telephone service, and has declared that it prefers to control the present company. This policy secures to the Bell Telephone Company absolute immunity from interference with its so-called vested rights, and perfect freedom to continue its past policy of arrogance and extortion in so far as it is not restrained by competition.

The people of Manitoba are intelligent enough to resent any attempt, on the part of the Liberal press and the Bell Telephone Company, to throw dust in their eyes by suggesting that the Dominion government may revoke its telephone policy of last session and enact more remedial legislation than that of the provincial government.

The position in Manitoba is briefly this:

There is a present population of 360,000 people, with about 6,500 telephones, or one telephone to each 55 inhabitants. Not including the "Bell" telephones, the state of Iowa has one "Independent" telephone to each 12 inhabitants. Five years hence this province will probably have 1,000,000 inhabitants, and allowing for the same development as that of the Independent companies in Iowa there will, in the next five years, be a demand for 80,000 telephones. Who is going to supply this demand? A monopolistic corporation which has proved itself incapable of developing the rural districts and whose base of operations is 1,500 miles away; or the citizens of this province through their legislative and municipal councils?

The provincial government is ready to provide the long distance service at cost; whereas at the present time the people are, with one or two exceptions, paying the highest rates in the world. Before doing this, however, the government has provided that the people shall say whether they are desirous of a continuance of the present conditions, or if they are willing to confer upon the municipal councils elected by themselves, authority to cooperate with the government by building and operating the local exchanges, and so obtaining a service at rates averaging one-half the present charges. In the event of the people choosing the latter alternative, it will be left to each individual municipal council to take whatever further steps may be in the best interests of the ratepayers whom they represent. The municipal councils are perfectly capable of carrying into effect the wishes of the people they represent, and the Bell Telephone Company and its supporters need have no anxiety that any council will force upon an unwilling municipality a publicly owned telephone system.

The people are asked by the government to decide this question for themselves and they will record their vote for whichever policy they consider to be for their own interests. If the Bell Telephone Company are able to convince the people of Manitoba that its policy is better than public iwnership, by all means let it do so, but it will only intensify the chances of its own defeat by any attempt to make it a political issue.

A TRUMPED-UP GRIEVANCE

Opposition to the Manitoba government's telephone policy has indulged in a number of bold misstatements. One of these is the assertion that to take over the Bell Telephone Company's property in Manitoba would be to inflict a serious damage on the whole Bell system.

It is suggested that it would be just as fair to detach that portion of the C. P. R. system lying within the province of Manitoba from the parent railway system as to eliminate the Manitoba lines of the Bell monopoly from the parent telephone system. This argument hardly deserves serious contradiction.

The Bell telephone lines of Manitoba have no connection with the company's eastern system. Except in the matter of ownership they are totally separate systems and divided by a stretch of territory which forbids telephone connection.

The Bell Telephone Company would not be embarrassed by the elimination of the Manitoba lines from its system except in the loss of local receipts. In this respect Manitoba is fortunately situated, and it is her isolation from eastern connections with the Bell Telephone Company that justified the request of the Manitoba government for powers of expropriation of the Bell property in this province.

If the Dominion authorities had conceded Manitoba's reasonable request the Bell Telephone Company would have searched in vain for a grievance. It would have been compensated dollar for dollar for the amount of its legitimate investment in this province.

Bell Telephone influence at Ottawa was too strong to secure this measure of justice for Manitoba. That same influence is now manifesting itself in newspaper opposition to the Roblin government's telephone policy and in labored pleas for sympathy for the Bell telephone monopoly. The public fortunately is not blind, and it will not hasten to shed tears in behalf of the incorporated tyrant that is being so tenderly cared for by the Winnipeg Free Press.

AMENDMENTS NOT EFFECTIVE

It has been claimed in certain quarters that the recent amendments to the Railway act by the Dominion government, regarding telephones, furnish adequate relief to the disabilities complained of by the public before the telephone committee at Ottawa, in the matter of the Bell Telephone Company's monopoly of the long distance service and the relations between that corporation and the railways of Canada. If any doubts existed in the minds of the people as to the incomplete and inadequate nature of the recent Dominion legislation, in so far as the people's rights are concerned, these should be entirely dispelled by a letter, which we publish in another column, received by Francis Dagger, the provincial telephone expert, from A. F. Wilson, the secretary of the Canadian Independent Telephone association, which voices the unanimous opinion of every telephone system in Canada which is free from Bell influence.

Mr. Wilson is a barrister, and has for some years been officially connected with the Dominion Liberal organization. His criticism of the Dominion legislation is therefore that of one possessing the necessary training to give an unbiased opinion and is further free from any political prejudice.

It is a clear statement of the facts looked at from the people's viewpoint, which proves beyond dispute that the legislation referred to have no bearing whatever upon the question at the present time before the municipal electors of Manitoba.

So far as the Bell Telephone Company is concerned, its monopolistic influence is just as great today as before the railway amendments were passed. Furthermore, this legislation affords that corporation with a few more plausible arguments for fastening its yoke on the people. In this province, however, the people have the remedy in their own hands, and we believe they are wise enough to see that provincial and municipal ownership is the only solution of this question.

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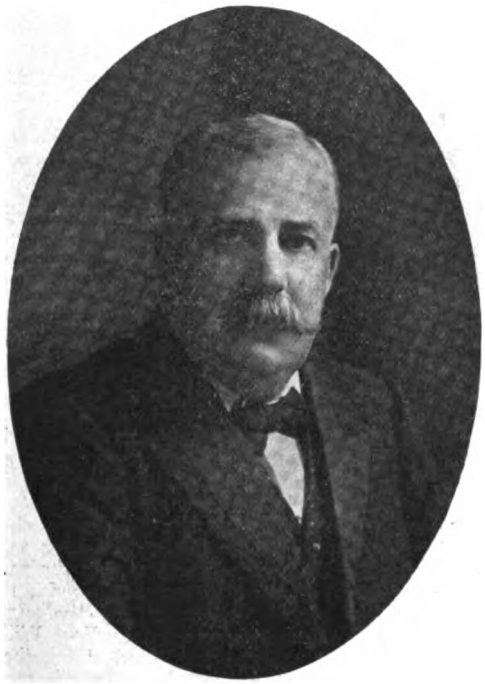
The Government's Telephone Policy

A public meeting was held in the city hall, Brandon, Man., recently to discuss the telephone question. It was presided over by Mayor J. W. Fleming. Among those present were Dr McInnis and other prominent citizens who manifested great interest in the proceedings. The meeting was addressed by Francis Dagger, ex-Mayor Dyke of Fort William and J. B. Ware of Michigan. At the close of these addresses, which were listened to with great attention and cheered with frequent applause, Mr. Laycock of Brandon, whose son is manager of the Bell telephone exchange at Rapid City, read a typewritten statement which contained an abusive attack upon Mr. Dagger and the government.

Dr. Dagger refused to reply to the personal attack. Among other statements contained on this letter was one to the effect



HON. R. P. ROBLIN,
mier of the Province of Manitoba

that Sir William Mulock left the Dominion cabinet because of the unreliability of the sworn evidence against the Bell monopoly presented at the Dominion telephone enquiry, and also because of his disgust with the principles of government and municipal ownership of telephones.

Ex-Mayor Dyke ably refuted these charges, and branded them as false, Sir William Mulock having expressed to ex-Mayor Dyke personally his satisfaction with the evidence presented before the select committee in favor of public ownership. Hon. J. W. Ware showed that the government proposition on the line indicated, based on the experience of the Independent companies in the United States would undoubtedly prove successful. A resolution of thanks to Dr. McInnis and Mr. Inglis was voted to the speakers.

A meeting will be held at Minnedosa tomorrow afternoon at 3 p. m. when Messrs. Dagger, Dyke and Ware will present to the people of that town the important question.

MR. DAGGER'S REMARKS.

Mr. Dagger, in the course of his remarks, said: "It affords me much pleasure to be with you tonight for the purpose of outlining to you the proposals of the government of Manitoba in regard to the future provision by the people of an adequate and efficient telephone service at the lowest possible cost.

I am fortunate in having with me two gentlemen, one, Joshua Dyke, ex-mayor of Fort William, whom you will all know has become famous throughout the Dominion as the pioneer of what is today one of the most successful municipal telephone sytems in the world. I refer to Fort William and Port Arthur. This gentleman is probably in a better position than anyone in Canada to discuss from a municipal standpoint, in the light of practical experience, the subject of municipal ownership of the telephone service.

The other gentleman with me, J. B. Ware, secretary of the Michigan Independent Telephone Association, is one of the foremost pioncers of Independent telephony in the United States, having been responsible for the promotion and establishment of a company which today operates 25,000 telephones and 3,500 miles of long distance lines in the state of Michigan. His system includes Grand Rapids, where today the largest number of subscribers are being furnished with service at the lowest cost of any city on the American continent. This gentleman is in a position to give you the most reliable information, based on actual experience, as to what can be done in the matter of furnishing telephone service by the people of any community in competition with the Bell monopoly.

GOVERNMENT'S POLICY.

In order to afford you ample apportunity to hear the interesting statements which the two gentlemen I have referred to will make, I propose to confine myself as much as possible to the proposals of the government and not to take up your time in connection with those subjects which they will refer to.

I would preface my remarks by a statement which has been made in certain quarters to the effect that I am a political tool and a mercenary, or in other words that I am here to further the interests of a certain political party and not those of the people, by advocating the policy of public ownership of the telephone service.

I may say that in January, 1903, I made what I believe was the first public statement in the English speaking press advocating the policy that the best method of providing an adequate telephone service was for the government to own the long distance lines and the municipalities the local exchanges. That is nearly fourteen years ago and I am here tonight to advocate the same policy which I advocated at that time. Further than this it is not usual for a political tool to be employed by both political parties, yet this has been the case in my experience.

MULOCK WAS INTERESTED.

In 1903 Sir William Mulock, the then postmaster-general of this Dominion sent for me and instructed me to prepare for him a report upon the telephone situation in Canada and elsewhere. This report was furnished by me in March of the same year. From that time to March, 1905, I received no communication whatever from the postmaster-general, but in that month I was called to Ottawa as the first witness before the select committee on telephone systems, which had recently been appointed by the government under the chairmanship of Sir William Mulock, I was then appointed by that committee to act in the capacity of technical adviser and assistant. My engagement with the Dominion government terminated in February of this year and I had completed arrangements to visit England on important business. On the eve of my departure I received a wire from your attorney-general requesting me to give evidence before the select committee appointed by the government of Manitoba. At considerable inconvenience to myself I visited Winnipeg, going direct to England from that city.

I heard nothing further until August 25 last when I received a letter from Hon. Colin Campbell, which contained these words: "The government is anxious to begin a campaign of eduaction along telephone lines and to be absolutely non political," with a further request that the government would like to engage my services in connection with that policy.

The result was that I came to Manitoba, and if I had the remotest suspician that I was being used as a political tool and not in the interest of the people I would not be with you this evening.

ADOPTED UNANIMOUSLY.

The legislation enacted by the provinicial government last session was passed by the legislative asssembly without a dissenting vote on either side of the house. The committee which investigated the telephone question and recommended the adoption of this legislation by the legislature comprised members of both political parties, including the leader of the opposition. Under these circumstances any statement that the action of the government has been prompted by the selfish motives of the party in office is absolutely without foundation or justification.

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The truth about this matter is that at the time of the Dominion telephone enquiry there was a wave of outraged public opinion all over the Dominion, and particularly in that territory served by the Bell Telephone Company, against the conditions under which telephone service was furnished to the people, and overwhelmingly in favor of public ownership of that service. That opinion was voiced through various public bodies and municipal councils, and more particularly at the convention of the union of Canadian municipalities held in Winnipeg in July last year.

It was hoped by many that the plan outlined by Sir Wm. Mulock at the first sitting of the Dominion telephone enquiry, viz., that each municipality should be assisted to own and operate its own telephone service would be adopted by the federal government. Unfortunately for the cause of the people Sir Wm. Mulock retired from the government, his successor being the leading counsel of the Bell Telephone Company before the Ottawa enquiry and an aggressive opponent of public ownership in any form.

THE ONLY WAY OUT.

It therefore became evident that if the people were to be released from monopolistic conditions in regard to telephone service such a result could only be obtained through the provincial governments. The government of Manitoba, which had been closely following the situation, therefore took up this question, and in so doing was only following the request of the people voiced by the union of Manitoba municipalities, which at its convention endorsed the government policy and pledged that the union should co-operate with the government in carrying that policy into effect.

This legislation, as enacted in chapter 89, provides that the provincial government shall build and operate the long distance telephone service throughout Manitoba and further, that upon the request of the municipal council it shall construct and operate a local telephone system in the cities of Winnipeg, Brandon and Portage la Prairie. Further than this, it is porvided that in order to remove the control of the system outside the influence of politics, a commission of not more than three commissioners one of which shall be a qualified engineer, shall be placed in absolute charge of the telephone system constructed by the government.

The construction of these long distance lines will require the expenditure of a large sum of money, and before proceeding to carry out this work the government very wisely seeks to ascertain to what extent the provision of these long distance lines will be appreciated by the people and whether the majority of the municipalities are prepared in the near future to construct local exchanges to connect with and furnish revenue for these lines.

WHAT THE ACT PROVIDES.

The act therefore provides that the duly qualified ratepayers shall at the next municipal election answer this simple question: "Shall this municipality own and operate its own telephone?" An answer in the affirmative does not give the municipal council authority to construct a telephone system or any part thereof. It simply means that in the event of such council being requested by the people of that locality, to establish a telephone service, and being able to satisfy the government that it has a sufficient number of subscribers to produce a revenue which will make the undertaking an absolutely remunerative one, the government will sanction the municipality to proceed with the construction of the system and for that purpose will enable the municipality to obtain money for such construction at the lowest rate of interest, by endorsing the bonds and guaranteeing payment of the interest and repayment of the principal of such debentures.

The government will further render every assistance to the municipality by placing the services of its experts at the disposal of the municipality, by making contracts for the purchase of large quantities of supplies at the lowest cost and furnishing such supplies to the municipalities at a price which they would otherwise be unable to obtain them at, thus enabling them to construct a system in accordance with the government specifications at the lowest possible cost.

ANSWER THE BILL.

I will here deal with a few comments which have been made in regard to the municipal legislation by these who, apparently acting in the interests of the Bell Telephone Company, are seeking to create prejudice in the minds of the ratepayers in regard to the government's proposals.

In section 8 it states that the government may guarantee payment of the principal and interest, and it is suggested that instead of may the word shall should have been used. I would point out that in the latter event the government would have had no option but to carry out the law, endorse the municipal bonds without regard to the question as to whether the local scheme would be remunerative or otherwise. The government very wisely retain the right to endorse these bonds in order that it may not be called upon to injure the credit of the province by guaranteeing an unremunerative undertaking.

It is further objected that in clause 12 in the event of an affirmative vote the municipality has the right to issue debentures without submitting a further by-law to the ratepayers. In answer to this I would say that if the people in any municipality have not sufficient confidence in the councils which they elect to believe that their wishes in regard to a municipal telephone service would be carried out, they will be perfectly justified in registering a negative vote. On the other hand I believe that people have that confidence in the men whom they elect to entrust them with the duty of fulfilling their requests. Further than this, as I have said before, the municipality must obtain the approval of the provincial government before constructing a system and it is most unreasonable to suppose that any government would turn a deaf ear to the people or consent to the establishment of a system in defiance of the wishes of the majority of qualified ratepayers. I would point out that to elimitate this part of the legislation would break up that unity of action in regard to the building of local telephone systems which is contemplated by the government.

GOOD BUSINESS PLAN.

If after an affirmative vote on this question each municipality had to resort to the usual procedure and could only obtain its money after the submission of a further by-law to the people, the result would be that after going to the expense for formulating a scheme, obtaining subscribers, preparing plans, and all the other preliminaries connected with the establishment of a system, it would be possible for the Bell Telephone Company with a natural desire to retain the monopoly, to concentrate all its forces upon one municipality, and by misrepresentation and other questionable methods, to bring about a defeat of such by-law, and even should the by-law pass the credit of such municipality could be attacked by the same methods as were adopted in the case of Port Arthur and Fort William.

As this legislation stands, once an affirmative vote is given, no opposition or no methods which the Bell monopoly can devise will be able to prevent a municipality, desiring to establish its own system, from doing so; and the fact that the government guarantees the debentures issued in connection with this legislation will adequately protect the credit of the municipality against a repetition of the tactics pursued at Fort William.

I may say in evidence of the free hand which the government proposes the municipality shall have in this matter that the act provides in section 10 that the council of the municipality "May take the necessary steps, etc., etc." This therefore leaves every municipality free to take whatever course it considers in the best interests of the people irrespective of the fact that a vote has been given in the affirmative.

ALL INTERESTS SAFEGUARDED.

Further than that, section 13 provides that "if the council neglects to furnish such telephone lines as are desired by the residents, such residents may organize a company to build and operate these lines." Therefore it cannot be said that this legislation in any way ties the hands of either the people or the councils. It simply provides a means, whereby the people can, if they wish, obtain their own telephone systems built in accordance with proper specifications laid down by the government and operated under conditions which, with the assistance and supervision of the government, renders such undertaking absolutely safe and remunerative.

It has also been suggested in some quarters that a person not having a telephone on his premises may be called upon to pay a tax towards the maintenance and operation of a municipal telephone system. In answer to that I wish to state emphatically that every municipal system will be self-sustaining and that no person not having a telephone on his premises will be called upon to pay one cent towards the telephone undertaking of any municipality. In other words, the man who uses a telephone will have to pay for it and no one else.

In regard to the price at which telephone service can be provided by the government, as the speakers following me will give you much information on this point, I do not propose to refer to this subject at length. I might say, however, it is absolutely certain that the majority of your farmers can obtain rural

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service at $12 a year, and that the residents of every municipality in Manitoba can be supplied with a telephone at the same rate.

LONG DISTANCE RATES.

In regard to long distance rates, the people of Manitoba have the privilege of paying, with perhaps one or two exceptions, the highest long distance charges in the world. Not only that, the Bell Telephone Company discriminate in the matter of these charges against Manitoba and in favor of the provinces of Ontario and Quebec. Without going into details, we believe that when the existing municipalities have fully developed their systems the government will be able to furnish you with this service at a quarter of a cent per mile for three minutes conversation. In any event from the inauguration of the system you will not be charged a higher rate than 3½ mills per mile, that is, at the rate of 35 cents for 100 miles, instead of the present Bell charges of 75 cents.

I would impress upon you that this is not a question of politics or newspaper opinions. It is a straight issue between the people and the Bell Telephone Company. You may rely upon it that the monopoly will exert every influence at its command to prejudice the minds of the people by personal canvass, by newspaper articles paid for as advertisements and inserted as pure reading matter, and every other questionable method which has been adopted in the United States and Canada during the past eleven years. This issue must be decided as you would decide a matter connected with your own immediate business interests. You have to ascertain the facts and pass your judgment upon those facts in so far as you may consider them to be reliable. In conclusion, this matter is one which will have a far-reaching effect upon the conditions under which you will obtain telephone service for the next generation.

"CRADLED IN FRAUD."

Nineteen years ago before the supreme court at Washington this dramatic forecast was made during the lawsuit for the Bell patents.

"This whole business was cradled in fraud. If this court finds in favor of the Bell Telephone Company, it will enable the plaintiffs to perpetuate the fruits of this fraud for many years, and to fasten on the necks of the American people a gouging monopoly, from which there will be no escape even after this patent has expired, for, by that time this corporation will have so wound its tentacles about the community that only an upraising of the people, such as is not conceivable, will be powerful enough to shake it off."

I would apply these words to Manitoba and paragraph them thus:

"If the result of this vote is not in the affirmative, it will enable the Bell Telephone Company of Canada to pereptuate its past policy of arrogance and extirtion for many years and will fasten on the necks of the people of this province a gouging monopoly from which the people of this generation cannot escape, and in the next generation this corporation will have so wound its tentacles about the community that only an uprising of the people such as is not conceivable will be powerful enough to shake it off."

Every pole which the Bell Company places in the ground, every yard of wire which it erects, and every telephone which it installs, will make it more difficult for you to free yourselves from the grip of this Boston octopus and will make it more easy for that corporation to treat you with defiance. You have the opportunity in December next to decide between bondage and freedom, between limited service at high rates and a completely developed service at low rates. Between private monopoly controlled from Boston, New York and Montreal, and public ownership under your own control.

Whatever your decision may be, consider your own interests in this matter, but be assured it will be much easier to change your governments than it will be to reverse the telephone policy which, by your votes, you will establish at the next municipal elections.

EX-MAYOR DYKE'S ADDRESS.

Ex-Mayor Dyke of Fort William delivered a clear and vigorous address on municipal ownership of telephones. He spoke in part as follows:

"In discussing this question of municipal ownership it is necessary to clearly understand what is meant by municipal ownership as distinguished from private corporations. The private corporation has only one object in view, to earn all that can be earned and create such dividends as will make the corporation wealthy. Incidentally the corporation benefits the public; but its main object is to secure wealth, as much of it, and as quickly as possible. It is clear, then, that the ruling motive than Bell telephones on their premises. We also discovered that of the corporation is a selfish one. Municipal ownership aims first of all to see that the plant, or whatever it is, in which the capital is invested, is the very best in adaptation that money and science can devise. Next it is the duty of municipal ownership to see that the interest, sinking fund, operation, maintenance and depreciation expenses are safely provided for and regularly met. Then all the benefit which arises from the expenditure and operation of this capital is not to create dividends, not to pile up millions of wealth, but solely and absolutely for the public good. The public good in the best service at the lowest possible rates. The private corporation seeks the benefit of a few individuals, while municipal ownership seeks only and absolutely the good of the entire people.

"It is a mistake to suppose that municipal ownership is a new thing. It is one of the oldest principles of society. In the present day public utilities such as waterworks, street railways, electric lights, telephones and other lines, it has a wide application; and like most great principles it has 'come up through much tribulation.' In Great Britain, the birthplace of this and many other noble ideas for the good of the human race, opposition to municipal ownership was made strenuous. A group of people called 'moderates' on the London county council, supported by strong financial interests which were supposed to be affected by this municipal policy, predicted all sorts of calamities and disaster. Papers were read before learned socities, showing the utter impossibility of successful municipal ownership. Parliamentary committees considered evidence which was presented against the idea; capital and corporations wanted to block the way; contractors and local tradesmen were informed that private enterprise would stagnate, would be entirely destroyed, by municipal ownership. It was perdicted that local rates and general taxes would be diverted from their legitimate purpose and prostituted to promote municipal madness. These agitators created a general furore against this reform, and openly declared that the municipal ownership man was an enemy of commerce, an abettor of socialism, a vampire, devouring the vitals of the body politic; the municipal ownership man was a lunitic, at large whose ideas and person should be placed in safe keeping at once, and sooner if possible.

THRIVES ON OPPOSITION.

"But in spite of all this opposition, municipal ownership has grown, until at this hour there are few questions of greater importance to the citizens of this young country than: shall great public utilities be owned by the people, or shall they become 'golden stairs' up which a few millionaries shall climb, that they might have a more comfortable view of the struggling masses below?

"It was in the early days of 1902 that the idea of municipal ownership of telephones took tangible form in the towns of Fort William and Port Arthur. I had just been elected mayor of Fort William. The telephone situation was acute. The service of the Bell company was inefficient and very inadequate. The citizens and the Times-Journal protested and appealed; but we might have gone to hades, or some cooler sphere, for all the attention we secured. So in my inaugural address of January, 1902, I suggested that it was time the two towns owned and operated a system of their own. Port Arthur, always full of enterprise, met the suggestion at once by appointing a committee of their council to co-operate with Fort William. I was elected chairman of that committee. We spent some time investigating several systems of telephony, and ultimately installed the central energy system of the International Company of Chicago, at a cost of $12,500 for Fort William and $12,000 for Port Arthur. Our people were so unanimous on this question that there were only twenty-one votes cast against the by-laws, fourteen in Port Arthur and seven in Fort William, out of a population representing 12,000 citizens. By December, 1903, the telephone systems of the two towns were in operation, with a united capacity of 800 phones and about 300 subscribers.

RATES ARE LOW.

"Our rates were $1 per month domestic and $2 per month commercial. We had a full exchange between the towns. Our apparatus was new, our people were pleased and we were sailing over a very smooth sea. But trouble comes to everybody, and telephone systems are not exempt. We expected to connect our telephones with the various railway systems. The Canadian Northern people, as soon as they were asked, said: 'Yes, put your phones in. It will be a convenience to us as well as to you.' But when the C. P. R. was requested they said that a certain agreement 'blocked the way.' On investigation we found that this blessed agreement gave free phones in return for free transportation, and also bound the C. P. R. not to permit other

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this binding agreement between two of the largest corporations in Canada, both of whom had been granted by parliament special privileges which rightly belong to the people.

"We found that this wonderful agreement was signed May 1, 1902, just four months after we had declared our intention to install a municipal telephone. Although Fort William had given the C. P. R. the land on which their works were built, and had exempted them from taxation for twenty years, we could place no municipal telephone on their premises, either for their business convenience or our own. I leave it to this audience, and I am sure you will have more of the grace of charity than I have, if you say that this agreement was not done with special intent to damage our telephone system. I am glad to tell you that the citizens of Fort William and Port Arthur are made of that kind of material that will not sit down under a disability like this. The fight has been kept up for four years, and that infamous judgment of Mr. Blair, who was heavily interested in corporation telephones, late chairman of the railway commission, has been upset, in which Fort William and Port Arthur were adjudged to pay $5 a phone to the Bell company and $80,000 damages to the C. P. R. for losses supposed to occur through breaking of this agreement.

FIGHT OF FOUR YEARS.

"I say, after a fight of four years and the expenditure of considerable personal time and money, we have secured a measure of relief, but not yet all the relief needed, or which we intend to get. Trouble No. 2 came in the shape of a fire in March, 1903, which burned up our central equipment and the old town hall. Our system was popular. We had more orders than we could fill. Telephone business was booming. The Macdonald Engineering Company were building an elevator and wanted our 'phone. We had no authority to erect poles on the C. P. R. premises. So we attached our wire to an electric light pole, at the dead end of a circuit, and ran our wires from this pole along an overhead bridge and attached to the elevator. This plan worked well for some time. The Macdonald Engineering Company could telephone our merchants for lumber, hardware, cement, anything they wanted. It was a great convenience. But one drizzly night in March someone equipped with spiked boots climbed the electric light pole and threw the bridle of the arc light across the telephone wire, with the effect of switching 2,000 volts from the primary electric light wires on to the telephone circuit, which was intended to carry only a current of 30 volts. Our beautiful new central board, with its wonderful mechanism, the best that skill, science or money could produce, was in a blaze; the operators fled from before it, and in a short time, of our central equipment and town hall, nothing was left but wreck and ruin.

"To a young, ambitious city like Fort William these were great difficulties. Our opponents wanted to buy us out, but we proposed to build a bigger and better. In eight weeks a new central fireproof station was erected, a much larger central equipment installed and the system brought into use again.

GROWTH OF THE SYSTEM.

"I cannot do better than give you a few figures which show the solid growth of our telephone system. On December, 1902, we started with 150 subscribers and a plant that cost $12,500. By the end of 1903, notwithstanding our great loss by fire, we had 350 telephones, with an income of $3,025.25, and an expenditure exceeding that by $311.56. We expected a deficit on the first year's operation and were glad it was so small. By the end of 1904 our income was $5,389.63, our expenditure was $4,038.38, leaving a net gain of 554.25, after providing for the deficit of 1903. By the end of 1905 there was a net gain of about $1,000. Similar progress has been made in Port Arthur. Superintendent Jones of Fort William informed me some days ago that 1906 would be the best record of all. You say $1,000 is a small net profit. Of course it is. And we intend it to be so.

"Our price of $1 per month domestic and $2 per month commercial meets all charges of interest, sinking fund, maintenance and operation, and by giving these low prices, has saved to the pockets of the citizens of Fort William and Port Arthur about $40,000 in four years, as the difference in the price they would have been charged by a private corporation. There are now nearly 2,000 telephones in these two towns, and I have yet to discover anywhere on this continent any telephone system of 2,000 subscribers with a tariff of $1 domestic and $2 commercial. We are only able to do this because the profits go into the pockets of the people by a low rate, instead of into the dividends of corporations. The citizens of Manitoba have an opportunity of municipal ownership in telephones which has never before been presented in the history of the British people. It is not a political issue. Both Liberal and Conservative members voted for it in your house of assembly. I am unable to believe that for any reason that sensible citizens of this province will turn so generous and wise a proposition down. It is your privilege by voting 'yes' to have installed all over your province the most scientific system the world knows anything about. To have this system owned by the people and operated for the people's benefit; by voting 'yes' to this proposition you will do yourselves good; you will do all the people good, and the generations yet to come will recognize that you have given a wider application to the rights and liberties of the British people."

VOICE FROM MICHIGAN.

Hon. J. B. Ware, Grand Rapids, Mich., secretary of the Michigan Telephone Association, in his address outlined the growth and success of the telephone movement by the people in opposition to the Bell in the United States, and said: The patents, owned by the Bell Company prevented competition before their expiration in 1893. For two or three years thereafter by litigation the opposition movement was kept down. In 1895 in numerous places throughout the central northern states small telephone plants sprang into existence. In July, 1896, the Citizen's Telephone Company of Grand Rapids began to give exchange service, being the first company to operate 1,000 or more telephones in opposition to the Bell Company.

Having the management of that company during the first five years of its existence and having been continuously and exclusively in the telephone movement since that time, I give you facts and results based on the eleven years experience of my company and myself.

We soon demonstrated we could give better service than had been given by the Bell, and have further demonstrated we can build cheaper than has the Bell company, operate cheaper and thus furnish good service at a less price than could the Bell, and yet earn a profit.

This latter fact is largely owing to the ability of non-Bell companies to buy in an open, competitive market, while Bell companies must buy without competition in prices.

In 1896 the Bell had 1,471 telephones in Grand Rapids at $40 for residence and $50 for business telephones. Our company today has over 8,000 telephones (population 100,000), at $24 for residence and $36 for business telephones. The Bell now has 3,400 telephones at rates $6 per year less than ours. Owing to the great superiority of our automatic service we had net gain of 1,048 telephones in Grand Rapids last year, the Bell gain being 198.

IDEA WELL DEVELOPED.

We have thoroughly developed the cities, villages and rural communities in our commercial territory tributary to Grand Rapids and to which it is the metropolis. This territory is nearly 200 miles long and 80 miles wide. In it we own over 70 exchanges, aggregating over 24,000 telephones, the Bell having nearly 9,000 in the same territory. Besides these telephones which we own are those of several companies in which our company has the control, that have over 5,000 telephones, making about 30,000 telephones for this interest alone. Other Independent companies in Michigan have over 5,500, being more than 85,000 in our state and over six times what the Bell had when we began service.

The following figures give fairly the relative strength of the two interests in our territory, using the larger cities and villages only:

Place—	Pop.	Inde. Tele.	Bell Tele.
Grand Rapids	100,000	8,012	3,400
Lansing	20,000	1,850	1,400
Traverse City	10,000	1,400	300
Cadillac	8,000	1,000	300(free)
Muskegon	24,000	1,300	400(free)
Holland	8,000	1,000	76
Portland	1,900	500	3
Lowell	1,800	350	5
Belding	3,600	350	4
Hastings	3,000	600	5

The last four places at one time had Bell exchanges. The Bell has not driven out one Independent exchange in our territory. In a large number of villages, like Vermontville, with 700 population, we have over 300 telephones as a result of the rural development, while the Bell has no exchanges. There are over 14,000 farmers in the lower half of Michigan having telephones and I feel safe in saying not over 10 per cent of these have Bell instruments.

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FARMERS ORGANIZED.

Many farmers have organized companies and built their own lines and are operating them successfully in spite of the fact the Bell did every thing in its power to prevent the development, and refused to connect the farmers' exchanges with their long distance lines until recently. Our companies promptly and all other Independent companies promptly gave connection to the rural lines of the farmers and furnished them good service at less rates than the Bell made. Very recently the Bell changed its policy and has secured a few farmer companies to connect, being forced by competition. It is an unnatural alliance and already the local companies complain of Bell methods.

AS TO RATES.

As to rates. We established $12 as our farm rates, giving best construction and service. While we more than paid expenses, we did not have sufficient profit to pay 8 per cent dividends on our investment, and are now charging $15 to $18 on new farm business. Four municipalities can furnish good farm telephone service at $12 per year, and by connecting with government long distance lines have a better service than the Bell have ever given.

There are many manufacturers of telephones and apparatus equal to or better than the Bell, which can be bought under sharp competition. Good men and foremen are easily obtainable to build and operate lines and exchanges, and I know of no reason why municipal telephone plants should not be eminently successful. It is an easy business to handle. Not one opposition company of the more than 100 in our state has failed, and by means of municipal and government service, good telephone service at cost can be secured by all the people of this province.

AGNEW OUTLINES PARTY'S POLICY

Under most auspicious circumstances the Icelandic Young Conservative club of Winnipeg held its inaugural meeting for the season of 1906-07 in the lecture hall of the Islandic church at the corner of Sargent avenue and Sherbrooke street. The growing importance of the young organization as a factor in upholding the Conservative political platform in provincial and Dominion public affairs was evidenced by the large representation of the Icelandic element which was present.

The meeting was addressed at length by B. L. Baldwinson, M. P. P., for Gimli, and Hon. J. H. Agnew, provincial treasurer, who demonstrated to the credit of the present provincial administration the achievements accomplished by the government in relation to the public and financial questions of the day. Mr. Agnew reviewed at length the history of the present municipal telephone issue and pointed out what had been done in this regard. He said:

"Possibly it might be of interest to the club if I took up a few minutes in connection with the telephone policy, which has been inaugurated by the government. The history of the movement is very shortly and briefly as follows:

"At the session of 1905, a number of companies applied to the legislature for charters to carry on the telephone business in the province of Manitoba. The Private Bills committee, to whom the matters were referred as usual, reported against the granting of the charters, and recommended that the government consider the question in the recess, and at the next session submit some scheme to the legislatures, looking to the establishment of municipal or government telephone systems.

"During the year the Union of Manitoba Municipalities took the mater up, and passed a resolution at a convention which they held in the city of Brandon stating that they would be glad to co-operate with the government in the establishment of the telephone system throughout the province, and that the long distance lines should be operated by the government, and the local exchanges by the municipality.

When the house met again, a special committee, composed of members of both sides of the house, was appointed, and this committee went very fully and thoroughly into the whole question, examining experts not only in Canada, but in the United States, and afterwards introduced a series of resolutions which were adopted by the legislature without a dissenting voice, and subsequently were passed unanimously. The result of this thtt unanimously. The result of this movement is that the governmentment proposes to own and operate the long distance lines, and the different municipalities throughout the province are given power to establish, onw and operate the different local exchanges.

"I have no doubt but that the action of the convention of the Manitoba Municipalities, and the action of the legislature, fully represents the opinion of the majority of the people of Manitoba. Naturally, however, a company as wealthy and powerful as the Bell Telephone Company would not allow such an action on the part of the people to pass unchallenged.

"One of the most insidious and plausible arguments that a wealthy corporation can use in connection with this matter would be to say that the movement was made from a purely political standpoint and with a view to further the political fortunes of the government, rather than assist the people of Manitoba, and this is one of the arguments which is most commonly heard.

"But I am prepared to say, without the slightest hesitation, that this is a movement which cannot be placed to any political or party motive. Let me remind you that the telephone question was investigated by the Dominion government, and the principal gentleman who interested himself in that matter was Sir William Mulock, an exceedingly able gentleman, the chairman of the committee, and who made a statement at the opening meeting of the committee. Sir William Mulock's plan was that the government should seek to organize and arrange for telephones to be practically within the reach of residents in a municipality, and that the long distance service would be controlled by the government—not very different from the proposal made by the municipal convention and the provincial government!

"It is sincerely to be desired that the Bell Telephone Company and its supporters will not mislead the people of Manitoba into thinking that there is anything of a political nature in the telephone policy, or anything but a practical business arrangement intended for the benefit and advantage of the whole people of the province.

"The question that is really before the people is whether it is better for the people to own and operate their own utilies, or whether they should transfer these valuable franchises to corporations. I believe that the people of Manitoba are very largely in favor of the policy of the government and municipal ownership.

"I would like to give you one or two reasons why Mayor Dunne of Chicago, a live and progressive mayor of one of the largest, richest, and most up-to-date cities of the world, favors municipal ownership.

"First, the cost of the utilitv to the public is reduced, second, the efficiency of the service is in every way increased; third, wages are increased, and the conditions of the workingmen operating the utility are invariably better; fourth, strikes disappear; fifth, graft and corruption are climinated.

"Let me suggest one way in which the cost in cheapened. Our committee took the testimony of the members of the Citizens Telephone Company, Grand Rapids, Mich. These gentlemen told us that they borrowed their money at 6 per cent., paid themselves a dividend on their capital of 2 per cent. a quarter, or 8 per cent. per annum, and were able to give the telephone to their rural subscribers at $1 to $1.25 a month.

"If a corporation formed for the purpose of making money can give phones at this price, what reason is there for failure when the matter is in the hands of the municipality or the government, who can borrow their money at 4 per cent., and do not seek to make any profit?

"It has been said that the telephone is an intricate instrument, and the business a peculiarly difficult one to carry on satisfactorily. Our investigations led us to the absolute conclusion that there is no mystery whatever about the telephone business, and that there is not the slightest reason why the government or any ordinary careful business man cannot carry on the business profitably and successfully. The experience of the thousands of successful Independent telephone companies in the United States is an absolute proof of this.

"One criticism of the government policy which has been most strongly insisted upon is that after the municipalities vote in favor of the system the matter is then entirely in the hands of the council; and the people have no further control. But it must be considered that if it were taken otherwise, and the plebiscite were taken an opportunity would thus be afforded for the Bell Telephone Company to marshall its whole enormous influence on each municipal election as it occured, and thus give it a much better opportunity to defeat the government ownership principle than it could possibly have under the present plan. Besides, the matter is not entirely left to the council. The government proposes to guarantee the bonds of the municipality, and before they will be accepted, to oversee the plan suggested by the municipality, and I do not suppose that the government would care to undertake the guarantee of the bonds unless the conditions of the municipality, and the plan proposed by the municipality, would be a safe and feasible plan."

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The Telephone Situation in Canada

Following is a letter received by Francis Dagger, Manitoba Provincial telephone expert, from A. F. Wilson, secretary of the Canadian Independent Telephone association. It has an educational value on the present stage of telephone situation in Manitoba:

F. DAGGER, Esq.,
Provincial Telephone Expert,
Winnipeg, Man.

Dear Mr. Dagger:—In reply to yours of the 6th inst. I am justified in saying that the Amendments (1906), to the Railway act do not meet the views of any "Independents" or "municipal" telephone people with the exception of those who have tied the "Bell" rope round their necks, or have never, with full information in their possession, looked into the matter intelligently.

1. The official voice of the Independents is found in the following resolutions—on long distance connection and on the Railway act—prepared by the executive and passed unanimously, by virtually a standing vote, at the annual convention of this association:

VOICE OF THE INDEPENDENTS.

Whereas, the amendments to the Railway act, especially those relating to matters between telephone companies and railways, made at the last session of the Dominion parliament without hearing representatives from the Independent companies, and in our opinion without a full or correct knowledge of existing conditions, are most unsatisfactory and inadequate;

And whereas, the machinery provided by the act for recourse to the Railway Board of Canada is unduly expensive to local companies, particularly farmer lines, and results in injurious delays which greatly interfere with the telephone company's business and prevents it from meeting the demands of the public;

And whereas, it is desirable that relations between the Independent telephone companies and municipalities and the railway companies should be amicable and conducive to the interests of all, especially that of the general public;

And whereas, matters requiring adjustment between the railways and telephone interests are those which affect to a great extent the vast number of telephone subscribers;

And whereas, the difficulties thrown in the way of Independent companies and municipalities by the railways have been in the interests solely of a monopoly;

Resolved, that the officers and executive committee of this association be requested to secure an interview with the chief authorities of the various railway companies and arrange, if possible, some fair and reasonable basis for terms in connection with access to and the placing of our instruments in railway and other depots, the crossing of telephone lines over railroads, and the use of railroad bridges and other communications, so that all telephone companies shall be placed on level and equitable footing;

And further, that the executive endeavor to obtain an interview with the Railway Board of Canada with the object of having it make such provision and regulations that applications in regard to telephone matters may be made simple, speedy and inexpensive, and that in regard to railway crossings compliance with standard regulations shall be suffucient without any order of the Board or other onerous conditions;

And further resolved, that in the event of fair and reasonable arrangements not being obtainable from the transportation companies, the executive or officers be instructed to prepare and circulate for signature among the shareholders of the Independent companies and their subscribers a petition to the Governor-General-in-Council and to parliament, praying for the necessary redress.

RESOLUTION ON MUNICIPAL FRANCHISES.

That whereas the granting of exclusive franchises is detrimental to the progress of cheaper and better telephony by excluding towns from the benefit of telephone competition and outside connection; be it resolved, that no municipality should have the power to grant exclusive franchises to any company, and that this association petition the legislature to rescind all legislation which makes this possible.

RESOLUTION ON LONG DISTANCE CONNECTION.

Whereas, it is found that the use of a telephone by the ordinary subscriber is about 97 per cent. entirely local, and that the best, cheapest, and most satisfactory, popular and the most generally used service is provided by local telephone systems managed, owned and controlled by local municipalities or by local private enterprises where the management is subject to immediate local pressure and adaptable to local requirements;

And whereas, in order to maintain inter-communication between local systems, whether municipal or privately owned, long distance trunk lines are necessary, but are beyond the financial ability or operating machinery of local systems;

And whereas, for the permanence of such local systems it is necessary and advisable that such trunk lines should not be controlled by a private monopoly, nor by a corporation, which, in addition to the trunk line, operates a local system in direct competition to the system which operates solely a local system, and thus the larger company uses undue pressure, the interests of each company directly antagonizing each other;

Resolved, that it is the opinion of the Independent Telephone Companies and municipalities here represented that inter-communication between local systems and long distance business should be secured exclusively over or by means of trunk lines operated by Independent companies or owned by the province, according to the respective degrees of development and the economic and political conditions prevailing in the various provinces.

SUGGESTIONS FOR CONVENTION.

2. In reply to the secretary's circular, sent to all companies and those interested in the telephone movement, inviting suggestions for subjects to be discussed at the convention, the predominant request was for Independent (non-Bell) long distance connection, or for the government acquisition of the "Bell" trunk lines.

3. Among the most prominent of the seventy-three or more non-Bell connecting systems reporting to the association, are:

In Quebec—The Bellechasse Telephone company.
The Beauce Telephone company.
The Portneuf Telephone company.
The St. Maurice Telephone company.
The People's Telephone company of Sherbrooke.
The Canadian Telephone company.

In Ontario—South Malahide Telephone company, 160 subscribers.
The Belmont Telephone company, 150 subscribers.
The Harrietsville Telephone association, 150 subscribers.
The Burgessville Telephone company, 200 subscribers.
The Markham and Scarboro Telephone companies, 450 subscribers, located up to a point within four miles of Toronto.
The Durham Union Telephone company, 200 subscribers.
The Welland County Telephone company, now constructing with over 400 subscribers.
The Erie Telephone company, recently started, with over 150 subscribers.
The Niagara District Telephone company, just starting with 150 subscribers. At the time this company was organized its shareholders and subscribers had over fifty Bell telephones in their residences.
The Ingersoll Telephone company, just starting, with 400 subscribers.

In addition to these companies, the "Stark" systems, operating at Toronto Junction, and having just obtained franchises at Oshawa and Bowmanville, and the Canadian Machine Telephone company, operating in Peterborough, constructing at Brantford and having recently secured a franchise at Lindsay, will not avail themselves of the railway amendments and patronize their unscrupulous competitor.

WON'T CONNECT AGAIN.

4. Several private systems which formerly had connecting agreements with the Bell, now that they are free, refuse to again connect with that system. Dr. Beaty, of Garden Hill, Ont., wrote me a letter last March, for use before the legislature, stating that he had an agreement with the Bell and connected the system with theirs. Under that agreement he was charged 25 cents to speak over the long distance lines from his own office telephone, and only 15 cents when he went across the street to the Bell pay station. The monopoly discriminated in the proposition of three to five against the very man with whom they had an agreement. His own subscribers were presumably

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similarly treated and his system discredited. This was before the railway amendments were passed, but it was done by the Bell under one of its own agreements: on a contract amicably arranged; not an involuntary connection forced by any foreign authority. I must be candid, however, and tell you that the Bell agents who try to get connecting agreements from the local companies state that the Bell management had a change of heart on January 1, 1906. Possibly is has, but most probably it has not varied its Bourbon policy to any appreciable extent. This I do know, that some gentlemen who are bound by Bell contracts are impatiently waiting for their termination, so that they may be free again.

5. So far as we have heard, no company or private owner has applied to the railway commission to compel connection, and the legislation is therefore untried and untested. Had such application been made, the press would have reported the fact, as it is matter of intense public interest.

RESTRICTIONS ON COMPANIES.

6. The Bell policy is illustrated by the following facts. It still insists, in all cases which have come under my notice, upon charging every Independent telephone user a small fee of 5 cents at least for each connection with a Bell local exchange; also upon the retention by the monopoly of the full long distance tolls or revenue, thereby depriving the local company of a just and necessary participation in that form of revenue, which acording to the practice of the long distance companies in the United States of America is admitted to be a necessary contribution to the maintenance and operation expenses of the local systems. The Bell also forces restriction of territory upon the local company, and, if possible, enjoins the latter not to compete with it, thereby eliminating any possible competition which will in the slightest degree detract from Bell revenue and Bell prestige. The Bell simply tries to use a small local system to secure business which it cannot get without reduced rates, and to give service which it refused to give prior to the advent of a competitor in the particular locality, and which it was claimed could only be given at a loss. The "Bell" uses the local system for this purpose, milks it by means of the interchange fees and the long distance rates, and further, sometimes discriminates in its long distance charges in favor of its own subscribers and against its connecting competitor, well knowing that ultimately the local system will fall like a plum into its hands.

THE BELL'S LEVER.

7. Several persons, who in response to solicitations have negotiated with the "Bell," inform me that the lever they are using to force connecting agreements with the local companies—in view of trunk line competition in Ontario from the Provincial Long Distance Co. I presume—is that the local interest can get far better terms by negotiating directly on a friendly basis with the "Bell" and arranging terms to be amicably carried dut, than they can hope to obtain through the railway commissioners by an aplication for compulsory connection; or in other words that the "Bell" will give far better terms and treatment to those who will deal with it directly than the railway commissioners of Canada will or can give.

8. The "Bell" special agents are doing their mightiest, short of giving living terms, to persuade the Independent rural lines to tie up, for what reason you may guess, but in every case where the Independent association had a representative on the spot to put the Independent view before the people, the shareholders have laughed the "Bell" man out of the room. There is only one exception to this, so far, I understand, and that one was where the local people had already committed themselves and did not care to go into the matter, it being too late to re-open it.

Perhaps you know better than the writer why the Independents will not connect with the "Bell" and are anxious for Independent long distance service, and in default of this for government trunk lines. I come possibly more in actual contact with the conditions here. Wherever an "Independent," or rather a person interested in a local system, is brought to a consideration of the matter he sees at once that he must not trade with his antagonist; that it is the same in telephone business as in manufacture or trade; one cannot (competing against another) work with an aggressive competitor which in his own locality is trying to put him out of business, especially when that business antagonist has the whip of a monopoly in the matter of long distance terminals and in trunk lines. The local man is the under dog and the other dog has no mercy. The "Bell" competes at home, has the trunk lines, can give what terms it pleases to its patrons, and further manufactures its own plant, while the local man has to buy his apparatus.

It is one of the anomalies of the telephone situation that a man who never had a 'phone and hesitates to join an Independent system, because it has not long distance connection with the "Bell," as soon as he becomes a subscriber is quite willing to wait until the advent of an Independent long distance connection or a government trunk line and hardly ever complains.

BELL CONNECTION NOT PROFITABLE.

Another peculiar fact is that a local system which has no connection with the "Bell" thrives under ordinary management and exertion, while one which connects with the "Bell" in the majority of cases, stagnates or becomes absorbed into the monopoly in a short time. So long as a local company remains free it has to fight and is aggressive; when it allies itself with the "Bell" there comes over its management a lack of energy; its shareholders cease to be aggressive; there is no longer any incentive towards increasing the list of its subscribers; there is no object in subscribers coming on the local system; its very contract with the "Bell" proclaims that the "local" is an inadequate system. All the initiative energy and desire for improvement and popularity, which spring from the parent's competition are lacking.

The danger to the public in local companies interchanging with one another is that there is an irresistible temptation to amalgamate, with the introduction of water into the stock, whereby the public lose the advantages of competition and have to pay dividends on a watered capitalization.

From the consideration which the writer has given to the matter of competing companies interchanging in the same territory, I have come to the conclusion that interchange locally or with a long distance company competing locally will be an absolute failure. Such interchanging in plain language is doing business over your competitor's counter, feeding your competitor, advertising his business, and popularizing it to the discrediting of your own, and an acknowledgment that your facilities are deficient, while your competitor is the best one to do business with.

MERGER MUST RESULT.

Interchange between two companies doing business all over must result in merger, while interchange by a purely local system will force it under if it be compelled to give long distance connection through a competitor. Permanent interchange necessarily means an ultimate combination in the whole business. We know that in railway matters, which is the illustration used by the advocates of compulsory interchange, the railroad which has to use its competitor's lines for any material portion of its traffic, in order to be able to compete with a rival, is fighting an uphill battle, and just as quickly as it possibly can, it builds its own lines to whatever point business seems to justify. Railway interchange is purely a temporary makeshift, and as soon as each line has its own railroad to any point, it is marvellous how much better the service given is, than it was when there was but one line, even though running rights were exercised.

OBJECTIONS TO LEGISLATION.

1. There is no adequate right to enter railway stations. The ground taken by Independents is that the public, including the Independent telephone subscribers, have a right to a place in the railway stations free of charge. Nobody has ventured to go to the board under the new legislation for permission, fearing that its conception of compensation will be so high that any order will be virtually prohibitive.

2. The clause giving the board right to compel interchange (section 31) does not attempt to give an unincorporated telephone system any relief, so that no farmers' association, or any small private, or rural line, can get connection under the act except on terms dictated by the monopoly. This means that hundreds of small rural lines, which are so small that incorporation is unnecessary and too expensive, are absolutely without any legal means of obtaining any relief which they desire in the way of forcing interchange, that is, getting long distance connection.

3. If section 31 is at all workable the interchange which may be compelled is only between two companies and goes no further. It is possible—though I do not think so—that it might be held that the interchange which the board is authorized to compel will give a connection only as far as the exchange of the other system is concerned, and will not go so far as to reach a telephone subscriber connected with that exchange. The wording of the section is very involved, but I do not think it can be so narrow. It gives to the "Bell," however, a case fit to take to the privy council, whereby it can delay matters for two or three years and create troublesome litigation.

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4. If the amendment, as I think it does, provides machinery for giving a subscriber on one system communication with a subscriber in another town on another system, it goes no further and will not compel one system to be the medium or connecting link between the two other systems; that is to say, if Winnipeg and Brandon had municipal systems, a subscriber to the Winnipeg municipal system could have connection over the "Bell's" long distance lines with a "Bell" subscriber in Brandon, but the Winnipeg "municipal" subscriber could not obtain communication over the "Bell" long distance lines with a subscriber to the Brandon municipal system. The same conditions would exist if Brandon and Winnipeg had different local Independent systems controlled by the same or by different owners. The act, in other words, does not authorize the board to compel a company to do a trunk line business between the two other companies which compete with it. It is probably beyond the ability of man to devise any practical means for compulsory interchange under the last mentioned conditions. For this reason your government, either by having a trunk line of its own, or, as Mr. Whitney granted here, giving a charter to a company for purely trunk line business, is taking the only possible way to give municipal ownership and private competitive local systems a workable medium of interchange and intercommunication, and the only way to make municipal or local systems permanent, and thus the only way to provide and maintain permanent competition, thereby curbing a private monopoly and relieving the public from the capacity of a business which, to the uninformed, seems to carry most plausibly an excuse for a monopoly.

COMPULSORY CONNECTION.

5. There is a possibility that section 31 may be held not to extend to an incorporated company. The Bellechasse Telephone company, I understand, submitted the matter to its solicitors, and they coincided with my view that it did give incorporated companies the right, but that the matter was not beyond question. Section 31—the compulsory clause—and section 34, use the word "province, municipality or corporation." Section 193 of the Railway act, which covers telephone connection with stations, uses the words "municipality, corporation or incorporated company." It might be argued that in clause 31 "incorporation" does not include an incorporated company, but a public corporation of the same nature as a municipality or a municipal council as distinguished from a municipal corporation itself, possibly to cover in some province a quasi-municipal corporation. In fact, section 35 though for the purposes of that section only distinguishes between a municipal corporation and a municipal council. I do not think this objection would hold but it would make a very nice legal point in litigation.

6. There is another possible objection in that whenever a company working under a provincial charter and statute enters into an agreement with a Dominion company the agreement has to be confirmed by the Railway board of Canada, and is so brought under the control of the Dominion government and its legislation. It is to be presumed that the provincial government will try to retain control of the companies which it creates, in the near future, placing rates of provincial companies under regulation by a provincial authority. There will then be a conflict of authority so that the Dominion government will likely have to follow up its latest legislation by taking over all telephone matters into its control, so that the present abnormal legislation can be made to work smoothly.

I believe that the Independent companies and the municipalities, which are also interested in the matter, prefer to remain under the provincial jurisdiction rather than that of the Dominion.

However, you can say that whatever legislation was passed last session was under the leadership of the "Bell" representatives in parliament, while the Independents were unable to procure an opportunity to be represented as a body. The facts, however, of the legislation being put through without the approval of the Independents and without their opinion, can be used, if necessary.

Yours sincerely,
A. F. WILSON.

People of Rosser Hear About 'Phone

Price's hall, at Rosser, Man., was well filled when Francis Dagger, provincial telephone expert, met the ratepayers of that municipality and gave a very interesting address upon the proposal of the provincial government to establish a system of provincially and municipally owned telephones.

The unanimous feeling of the meeting was that the government should lose no time in putting its proposals into practical operation, and that a rural telephone service at $12 a year connecting with Winnipeg would result in every farmer within that area taking a telephone.

In the course of his address Mr. Dagger said:

"Mr. Chairman and Gentlemen: My purpose here tonight is, as I supose you are all aware, to lay before you the government's plans in regard to the legislation which was passed by them last session. I need hardly dwell on the fact that that legislation was framed to a very large extent to furnish the rural communities of Manitoba with a cheap and efficient telephone service and I think it is unnecessary to say that the telephone question is a very important matter to the rural districts. Up to the present time in Manitoba these districts have been entirely neglected to be provided with that service and where it is good, it is at a rate prohibitive to the majority of farmers. The government proposes to obviate that difficulty; and to provide cheap and efficient long-distance services throughout the province. This legislation and this policy of the government, speaking from a political standpoint, cannot be called a party question. The legislation was passed by the house without a dissenting vote. The committee that the provincial government appointed to enquire into the matter consisted of members of both sides of the house, and its recommendations were unanimous. Now, if it were claimed for a moment that there was anything political, I think I can dispose of it by giving you just a little history of the telephone enquiry held at Ottawa last year, to which I was technical adviser. At the opening meeting of that enquiry Sir William Mulock made this statement in regard to telephones. He said:

MULOCK'S PLAN.

"'I have a plan in my mind on that point and I will outline it for your information. It is this. That we should seek to organize and arrange for telephones to be brought within the reach of residents in a municipality through machinery to be established by the municipality itself. There would be a practical difficulty in the way of the government of Canada establishing telephones in every man's house, keeping up repairs, collecting rates and so forth. But if by the co-operation of municipalities we could induce the municipalities to deal with the telephone service as a municipal service, charging their tolls as a tax in the ordinary tax bill, then the Dominion government would not be charged with the details of it. The group would make application to the municipality for telephone service, and the municipality could pass the necessary by-law under the municipal law for that purpose. Then the municipality would apply to the Dominion government by a method to be taken up later to establish a municipal telephone in that district. We would not deal with an individual, but we would deal with the municipality, and the municipality in turn would deal with the individuals as ratepayers, and there would be included in their tax bill an item for telephone service, the same as there now is for water rates.'

"Now I don't think that by the greatest stretch of imagination it can be argued that there is any great difference between Sir William Mulock's policy and the legislation passed by the provincial government of Manitoba. In the one case Sir William Mulock suggests that the government shall deal with the municipalities (referring to the Dominion government), and in the other case the provincial government proposes to do the same thing. Now you all know that the Dominion government did not adopt the suggestion of Sir William Mulock. For one reason or another, which I don't propose to discuss, Sir William Mulock left the cabinet before the telephone committee had completed its work, and the legislation recently passed does not in any way provide for or assist the people in supplying their own service. On the contrary, it does little more than protect the existing monopoly. It may control it to a greater extent than it did previously, but it does not furnish any real solution to the situation.

"This question is too important to all classes to allow politics to have any bearing on the subject.

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"Now, as a matter of fact, the telephone problem has been forced upon the provincial governments by the inaction of the Dominion government, and that inaction is due, not to politics, but to the influence of the corporations on both sides of the house. This I do know.

"Now, regarding the provincial legislation, I have the authority to say that the government is only too ready to rereive any sugestions or recommendations from the municipalities themselves bearing upon that legislation. If it can be improved in any way or amended to suit the needs of the municipalities the government will be only too pleased to listen to their suggestions and if practicable, to adopt them. Now, what the legislation provides for is this: There are two acts as you know, one chapter 89 and the other chapter 90. Now, chapter 89 provides for the government building a complete long distance service all over the province, and also for constructing exchanges in Winnipeg, Brandon and Portage la Prairie on the request of the municipalities to do so. Now, all that entails a very large expenditure of money, and the government has thought it wiser before they spend that money to ascertain the wishes of the people.

"For that purpose in the second act, which is the act providing for municipal telephone systems, they provide that on or before the date of the next municipal elections, the electors qualified to vote on property qualification shall answer this plan question: 'Shall this municipality own and operate its own telephones?' It is a very simple question, and the answer to it will voice the wishes of the people. If there is a vote in the affirmative, it does not mean that every municipality shall forthwith proceed to construct a telephone exchange. It is simply an expression of the people in favor of a government and municipally owned telephone service. After that, assuming that the vote is in the affirmative, it will be necessary for each council to get together and deal with the local conditions of its own municipality, and investigate and ascertain what they can do in the shape of building a service, at what cost it can be built, what revenue is required and how many subscribers they can obtain at a certain figure.

"After that, if they can satisfy the government that the undertaking will be a financial sound one, then, and not till then, the government is prepared to endorse the bonds of the municipality and to guarantee payment of the principal and interest. This is what will have to be done. Further than that, the government is prepared to give you the benefit of expert advice and assistance in investigating, and to give you all the assistance that will be necessary to enable you to construct a modern and complete telephone system. As you know the government is in a better position to purchase supplies than you would be.

"It can make large contracts for poles, wire, telephones and so forth. It will be able to supply the municipalities with material at cost price, thus enabling them to obtain material in the cheapest way. Further than that it will retain the services of a competent man who will be placed at the disposal of the municipalities at actual cost. These things will enable the municipality to obtain the very best services at minimum cost.

"Now, with regard to the district which more particularly interests you round Winnipeg, I may say that the government's plan is this, assuming that the vote is in the affirmative and that the government proceeds with the construction of its long distance system and exchanges in Winnipeg, etc.: It will define a territory round Winnipeg, say within a radius of twenty miles. Its idea is that the municipalities shall build their rural lines towards the city of Winnipeg, and provide a service to subscribers at $12 a year or $1 a month, giving for that rate a complete service to all subscribers in Winnipeg and also to the other subscribers on the other rural lines connecting with the Winnipeg exchanges. That may sound to you a little visionary, but it is not so visionary as it would appear.

"I have here the testimony taken at Ottawa. This is the testimony of Mr. A. L. Tetu, a French-Canadian who, for the greater part of his life has been identified with telephone companies in the United States. Last year he was the honorable secretary of the National Interstate Telephone Association of America, representing 3,000,000 telephones. At the present time he is general manager of one of the largest long distance telephone companies and is in every way qualified to speak upon rural lines. This is what he says about a farmer's system. He is speaking from a company's standpoint, a company that has to earn a dividend, and he states that within the jurisdiction of an exchange the size of the one in the city of Ottawa (3,000 telephones), and taking a radius of twenty-five miles, you ought to have from twenty-five to fifty party lines, varying from four to ten farmers on a line, at $15 per annum, giving these farmers use of the city service for that sum:

EASY TO ACCOMPLISH.

"Now that is pretty conclusive evidence and what a company can do for 15 a year and pay a dividend, and possibly in addition to a dividend, interest on bonds, a municipality that can obtain its money with the help of the government at four per cent can do better.

"Further than that, there is the question of long distance rates. Now you all know that the long distance rates in the province of Manitoba are very high. I have here a list of the long distance rates in this province and I would call your attention to the fact that in Manitoba you are paying, with one or two exceptions, the highest long distance telephone rates in the world, and not only that, you are paying much higher rates than the Bell Telephone Company are charging its subscribers in the province of Ontario.

"Now you may say that the government rate of ¼ cent per mile is low, but when I tell you that on the continent of Europe, where the cost of construction is much higher than in Canada, the rates are much lower, there is not much in that argument. In Switzerland the cost of one long distance circuit, including poles, is $416 per mile. President Sise stated that the line from Toronto to Montreal cost $250 a mile. Senator Thompson of the New Brunswick Telephone company said his long distance lines cost $150 a mile. So that on the cost of construction the conditions are against Switzerland and in favor of Canada.

"In Germany the rates are about 1-8 per cent. a mile. These returns are supplied by the German government. They are not fiction or taken from newspaper reports, but are furnished directly by the telephone departments in the various countries:

Up to	15 miles	5 cents
Up to	31 miles	6 cents
Up to	62 miles	12 cents
Up to	310 miles	24 cents
Up to	621 miles	35 cents
Distance exceeding	621 miles	48 cents

This is for a conversation of three minutes. In Switzerland you can speak for a distance of sixty-two miles for 10 cents, which is considerably lower than is proposed even by the Manitoba government. In England the rates are ¼ cent per mile, as compared with the above rates; in Ontario of ½ cent a mile.

ECONOMY OF THE PHONE.

"I would also call your attention to another fact and that is that outside of the United States and Canada, every country in the world that has any claim to be classed as a great nation owns and operates its long distance service, and it is just because of this that the people get these rates, and whatever may be said to the contrary it is an undoubted fact that all those systems are paying the government their expenses. It might be argued that if there was only ene government charging these rates, there was a possible loss, but it is a fallacy to argue that every country on the continent of Europe is losing money on its long distance lines. It is doing nothing of the kind. Even in Russia rates are lower than in the United States and Canada. What is done in Europe can be done by any government in any part of the world. That is why we say that the government of Manitoba is amply justified in proposing to charge a ¼ cent a mile. I further believe that as the population of the province increases these rates can be even further reduced.

"I now come to a point dealing with the cost of construction. As you may know that depends to a very great extent on the local conditions; but I have here a list of various costs contained in the sworn evidence of witnesses before the Dominion enquiry and the Manitoba committee.

COST OF RURAL LINES.

"The following information regarding farmers' lines in Canada is contained in the sworn evidence of witnesses before the Dominion telephone enquiry last year and gives the actual cost of building the systems referred to::

St. Joseph's I., Ont., $24.20 per mile, 1 No. 13 iron wire, 28 poles per mile.

Canada Telephone Company, Quebec, $45.00 per mile, 1 iron wire, 30 poles per mile.

Brighton, Ont., $25.00 per mile, 50 miles 1 iron wire. Witness bought cedar swamp and got poles cheap.

Sprague Telephone Company, Ont., $55.00 per mile, 1 No. 12 iron wire, 35 poles per mile, 180 miles. Cost includes telephones.

Harrietsville Telephone Association, Ont., $87.10 per mile, 2 iron wires, 30 poles at $1.35 each, per mile, 22 miles.

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Bellechasse TeTlephone Company, Que., $120.00 per mile, 2 iron wire, 4 pin crossarms, 40 poles (7 inch tops) per mile.

Union Telephone Company, N. B., $130.00 per mile, 2 iron wires, 4 pin crossarms, 40 poles (7 inch tops) per mile.

New Brunswick Telephone Company, N. B., $150.00 per mile, 2 copper wires for long distance, including poles.

It will be seen from the above figures that the cost of constructing farmers' lines is governed by the cost of poles and number per mile. Allowing, however, for the conditions existing in Manitoba it is safe to estimate the average cost of a line consisting of thirty poles per mile carrying one iron metallic circuit (two wires) at $100.

"Before the Manitoba committee these estimates were advanced:

"Mr. Menary, Melita, Man., 29 miles cost $3,246—$112 per mile. Mr. Smith, Gladstone, Man., $100 per 'phone, including 16 miles toll lines. Thomas Paul, Yorkton, $50 per 'phone in town and rural line $50 per mile.

"You will notice that there is a considerable variation in the costs given these, but as I said before that depends on local conditions. At any rate, it is perfectly fair to assume that you are absolutely safe in estimating that your lines would not cost more than $110 a mile for rural construction. With the rate at $12 a year you would get enough telephones between here and Winnipeg to make it a paying proposition.

THE BELL AND THE PEOPLE.

"There is another matter I should like to refer to, and that is the issue in regard to this question. There is no doubt whatever that it is a straight issue between the people and the Bell Telephone Company. There are no politics in it. There are no newspaper opinions in it. You have to ascertain the facts for yourselves and having done so use your own judgment as to the reliability of that information. You must form your own opinions and vote accordingly. There is at the present time a very serious influence permeating the whole Dominion and I might also say the United States, and that is the question who is going to own and operate these public utilities? The corporations or the people. It is perfectly plain to see. Anyone who can read and write can judge for themselves who is in the best position to provide a cheap service, the people who obtain a system into which has been placed absolute cost, dollar for dollar, whose plant account represents the actual cash expended, and on which amount you only pay 4 per cent., in addition to other expenses, or a company which has in all probability in addition to its absolute cash investment, which is covered by a bond issue, you have an amount of stock which you may call water, or promotion expenses, or legal expenses, or what you like; but it is there and the business is expected to pay 8 or 10 per cent. upon it. Now, between the two there is no question as to who is going to provide the cheapest service.

"Last week an application for a franchise was made before the Winnipeg city council. Assuming that the cost would be a million dollars in actual cash the company having got the franchise would issue a million dollars worth of bonds and in order to float these bonds they would in all probability issue another million dollars in stock. This is done by practically all large telephone companies. Therefore $100 worth of cash must earn the interest on that cash and also the dividend on another $100 worth of stock.

"Now, if these people can come along and offer Winnipeg telephones as low as $15 a year and make money by a proposition of that kind, it is not very difficult to see that the municipalities can do much better that this.

"You cannot place very much confidence in anything that you read which is not in support of the people's interests upon this subject. Newspapers are not always to be relied upon. I know myself I am justified in making the statement, but certain newspapers are not to be relied upon on this question.

"You have, as I said before, to look at the facts for yourselves, and, having these facts, judge of their reliability and tell your electors to form their own judgment. The policy of the government is not political. The legislation was simply passed with a view to giving you a cheaper and better telephone service and to that end, if I can be of any assistance or help you in any way, I shall be only too glad."

The chairman—"You have all heard Mr. Dagger explain the different phases of the telephone question and you may have some questions you might like to ask."

SOME DETAILED INFORMATION.

In reply to various questions put by the audience, Mr. Dagger stated that if the municipal services are established by the government they would not connect with the Bell company. The government service was intended to be a success and they could not expect to succeed if they connected with the "Bell." They could not connect with a competitor. You cannot make a success of any enterprise if terms are made with competitors. It has been said that the case of railways is parallel to telephones, but as they all knew a railway will never have running powers over a competitor's line longer than it can help, and the service of a railway over a competitor's lines is never a good one as compared with the service over its own lines. Once you connect with a competitor they will take advantage of you. This is especially true in the telephone business. In every case on record where a telephone company has connected with exchanges belonging to a competing company it had always ended in failure for one or the other. They wouldn't want a municipal service to be a failure and therefore they should not make terms with another company. As regards a complete system in Winnipeg, the government proposed to build an exchange there.

NO ANALOGY AT ALL

Francis Dagger, the provincial government telephone expert, has been vigorously assailed for offering contributions on the telephone question to the columns of the Manitoba newspapers. His action is likened to the offense of the Bell Telephone Company in buying newspaper space and leading the public to believe that opinion direct from the Bell Telephone Company's office is the honest expression of the newspaper itself.

Why should the Bell Telephone Company be denied the privilege of thus using the press of the country? asks the Free Press when Francis Dagger offers the newspapers telephone comment which he himself prepares. A more illogical analogy could hardly be sugested. Francis Dagger is a public official in the service of the people of Manitoba. The Bell Telephone Company is a private corporation in the service of its own interests.

Francis Dagger offers the newspapers of the province comment on the telephone question with the option of printing it or not printing it, as they may see fit. The Bell Telephone Company offers these newspapers opinion prepared by its own officials and has it inserted at so much per line. In other words, Mr. Dagger requests the use of the columns of the provincial newspapers; the Bell Telephone Company buys them. The service the newspapers give in response to Mr. Dagger's proposal is voluntary and spontaneous. The service the newspapers give the Bell Telephone Company is mercenary.

It should not require a particularly bright intellect to see the difference between the free offer of the columns of a newspaper to the service of the public and the surrender of the columns of a newspaper to a corporate enemy of the public for a financial consideration. Mr. Dagger has asked for nothing which a self-respecting newspaper devoted to the public interest could not freely give. Yet this is the service which the Free Press coolly compares with the action of a newspaper which prints Bell Telephone literature at a price and parades it as an impartial expression of opinion.

NOT A PARTISAN ISSUE

F. Dagger, the provincial telephone expert, has begun his campaign of educating Manitobans on the benefits of a public service. The Free Press, opposition leader Ed. Brown and their satellites are doing their utmost to discredit the whole proposal, attempting to make it a political issue and to do duty at next election. While the course taken by the Roblin government is not what we would wish, it is a long step in the direction of a public service and the best that has yet been submitted by leaders of either party, and it is a pity that Manitoba Liberal leaders and their organs cannot rise above petty partyism and assist the people to get the very best telephone service possible.—Birtle Eye Witness.

FAVOR TELEPHONE POLICY

At a largely attended public meeting at Rosser, Manitoba, Mr. Dagger, the telephone expert, explained the government's proposed municipal telephone system. The meeting was greatly in favor of govenment ownership as regards the telephone and advocates its installation and operation as soon as possible. As outlined by Mr. Dagger the rate would be about $12 a year for a twenty-mile radius.

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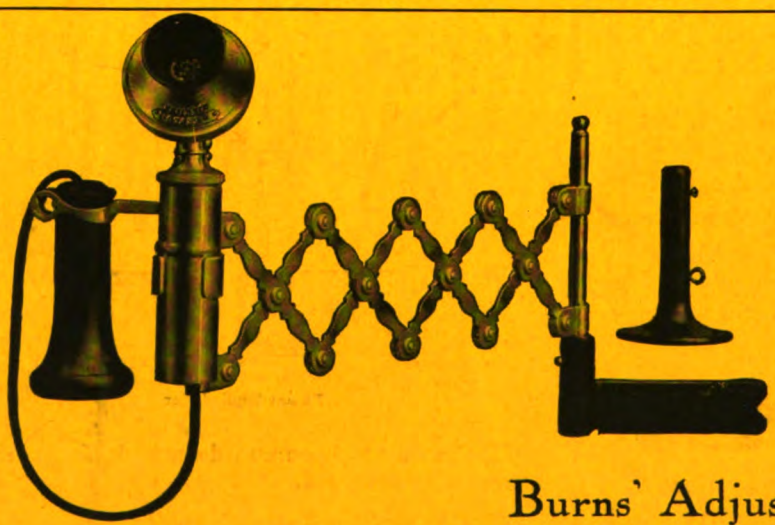

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SOUND WAVES

VOLUME XIII
No. 2.

INTERNATIONAL TELEPHONE JOURNAL

JANUARY
1907

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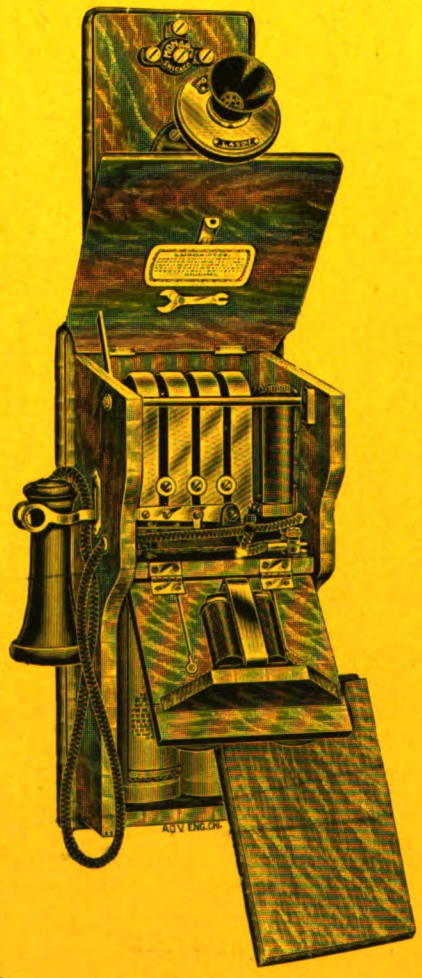

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SOUND WAVES

A Monthly Magazine Devoted to the Interests of Independent Telephony

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SOUND WAVES

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EDITORIAL COMMENT

AN ERA OF CONSOLIDATION

The Independent telephone and its use have passed beyond on the experimental stage. Only in two or three great centers of population does the Bell Company retain a monopoly. Everywhere else competing telephone systems have improved the people's service.

The one thing now needed to make the Independent plants superior in every respect is a centralized long-distance service; and if the signs of the times are not entirely misleading it will be but a very few years—if indeed that long—before the Independent companies all over the country will work in thorough harmony to give the people of the United States and Canada international toll connections far superior and far more extensive than those enjoyed hitherto.

In another part of this issue is published a news article written by a gentleman in close touch with political and financial affairs.

It is his opinion that within two years there will have been effected a consolidation of all the great Independent toll lines now in existence, together with those in process of formation at the present time.

When the vast amount of capital invested in such properties is taken into consideration, it may be doubted whether they can be brought under one management; although greater things have been accomplished by the wizards of Wall street.

Certain it is, however, that with the steady development of the Independent field locally there must come a harmony of interests in the long-distance service. The large companies must perforce enter into fair exchange contracts between themselves and establish national and district clearing houses to deal with the smaller companies.

The merging of the great toll lines into one national corporation and the absorption of the thousands of local exchanges is impossible without an evolutionary process, the ramifications of which are too mysterious—physically, politically and financially—to be comprehended at one glance.

The time may come when there will be but two telephone companies in the United States, but at present it seems removed so far that even tentative discussion would be a waste of time.

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Some Independent enthusiasts go so far as to say that within five years the Bell monopoly will be bankrupt and its properties absorbed by the greater Independent corporations.

Of course, in our kaleidoscopic commercial life such a change would not be impossible, but it is hardly within the range of possibility. An aggregation of capital, such as represented in the Bell properties, dies hard and very slowly.

Moreover, it is not to the interest of Independent telephony that it should be without a wide-awake opposition. It was competition which gave life to the movement and it is competition that must keep it from stagnation.

Local exchanges, owned by local capital, are the strength of the Independent movement and wherever possible local ownership should be encouraged by the promoters and directors of long-distance companies, who should give their best thought to bring about a standardization of engineering and practice rather than seek the acquisition of small properties.

Though the present era of consolidation has within it the germs of some good, it would be well to bear in mind that it also contains some elements of danger. The common people of the country do not care much who owns the long-distance lines, but the marvelous expansion of the local exchange business is sufficient evidence that they are vitally interested in the ownership of the telephone within their own city of county limits. Neither do they care where the toll profits go, but the earnings of their own systems they want to keep at home.

That is human nature—a side of human nature that was nursed carefully by the fathers of the Independent telephone movement, and an endeavor to eradicate it might be frought with considerable danger to the cause.

TELEPHONE SERVICE COSTS MONEY

While it is true that there cannot be too many telephones the organizers of so-called "co-operative companies" should not lose sight of the fact that the installation and maintenance of an effective telephone system is a business proposition pure and simple.

The citizens of a little town in Michigan, dissatisfied with the service that has been given them by a local company, are contemplating the formation of a "co-operative" organization. It is proposed by the promoters to issue stock to subscribers who will take contracts for a term of ten years at the rate of $8 per year for residence and $10 for business phones.

It is more than likely that the "stockholders" of the proposed organization will have troubles far surpassing the trials of the old company before very long.

In the first place they would have to purchase their equipment on long time, because the originators of the new company claim that no immediate outlay will be necessary.

Long before the expiration of the ten-year term the company would be owned by the party which is to supply the equipment; i. e., the Bell Company. Within three years, at a rough guess, the subscribers would have to pay a higher rental to the monopoly than they are now paying for Independent service.

In the far west a firm of construction engineers recently issued a pamphlet that reads well enough, but which cannot be carried out.

The pamphlet makes the broad statement that telephone service should be free, like county roads and the United States mails. Every taxpayer knows that roads have to be paid for and whoever mails a letter has to buy a two-cent stamp before Uncle Sam will undertake its delivery.

The telephone, just like roads or the mail service, must have public support back of it or else it needs private capital and enterprise, and the latter can be secured only where there is a prospect of reward in dollars and cents for the backers and organizers.

A number of purely rural lines have been organized and equipped by representatives of construction companies and manufacturers of telephone apparatus. The farmer pays certain installments until his phone is put in and in working order. Thereupon he becomes the owner of one fully-paid share of stock and entitled to the perpetual free use of the instrument for himself and immediate family.

The organizers get their reward in the sale and installation of switchboard, phones, etc., and the construction of the line.

The company is supposed to secure funds for operating expenses by the sale of service to non-stockholders, each stockholder becoming a committee of one to collect the dues from his telephone-using friends and neighbors who are outside of the "company."

The history of Independent telephony does not go back many years, but it has nevertheless already demonstrated that only companies based on sound business principles have succeeded.

Any company that fails to make provision for depreciation and maintenance is sure to fail, whether it be a co-operative or stock concern. "Something for nothing" cannot be had in telephone operation any more than in farming or merchandising.

APPLICATION ALWAYS WINS

The man who gets the most out of technical books and pamphlets is the man who reads them through from cover to cover—thoughtfully, slowly and intelligently.

The same rule applies to periodicals such as SOUND WAVES. The subscriber should familiarize himself with their contents, advertisements as well as reading matter.

He need not read the magazine through at one sitting, but some time during the month he should master its contents.

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The technical treatises may not interest the accountant, and the engineers may feel inclined to slight the articles on exchange accounting.

Both should bear in mind, however, that time brings with it many changes and that the progressive employe of today may be the manager of tomorrow.

Advancement comes only to men who are willing and able to master every detail of their chosen occupation. The man who is not competent to carry out his own orders, if necessary, is not competent to fill an executive position.

The business manager of an exchange in one of the large cities of the west, a few years ago, was a newspaper reporter. He started in the telephone business in a humble position; but worked hard, read the telephone papers intelligently and mastered several standard books on telephony. In a comparatively short time he was recognized as an authority by practical employers.

The engineer who knows all about accounting systems is prepared by such information to become an efficient manager and successful business man.

By the same token, the bookkeeper who seeks to possess himself of a fair working knowledge of engineering problems thereby equips himself for the performance of managerial duties.

No man should neglect to store his mind with any and all information obtainable in relation to his chosen work. Opportunity comes to the individual who is able to do things; in other words, it seeks the man who has made the most of small opportunities.

The salaried man who lacks the ambition to improve his mind and condition will always work in an inferior place and for a small salary.

The one who thinks, studies and keeps in touch with everything that is new is sure to advance and become a leader of men.

CHARACTER IN BUSINESS

Personal character is a potent factor in the building up and the maintenance of business standing and credit.

Not so many years ago a business man could lead a loose moral life without serious injury to his commercial position; but now his reputation is inquired into as carefully as his bank account by the various agencies established for the purpose of determining a merchant's or manufacturer's financial responsibility.

A libertine or habitual drinker is not to be trusted. He may be rich and solvent today—he may be rich all the days of his life—but the uncertainty of his moral condition makes him an extra-hazardous business risk.

A business man who puts himself under the influence of alcohol is committing commercial suicide. He may think that his inebriety hurts no one but himself. If he does, he is as foolish as the ostrich in the old school readers that sticks his head in the sand to hide, as he thinks, his generous bulk.

Not long ago the manager and part owner of a prosperous manufacturing plant, in a fit of alcoholic aberration, disclosed a business secret of vast importance in the barroom of a hotel. He not only lost his prospective customer but a question mark has been put at the side of his name in the records of several commercial agencies.

More than that. His action has injured the standing of his associates whose financial interests are in more or less jeopardy while they permit him to represent them in an executive capacity.

Even more feared by capital than the drinker is the man who seeks "affinities of the other sex" in his travels through the country. The swash-buckling days, when men considered themselves privileged to do as they pleased when away from home, are over. Sins nowadays find out the transgressor more swiftly than in the "good old days," and the black pages in the history of an individual can be read in many places by those financially concerned in his doings.

During the past year a number of prominent business men have been forced to "retire" by their business associates. Not because they were not good traders or salesmen, but because their habits made them untrustworthy and a menace to the credit of the companies with which they were connected.

What holds good of the managers and executive officers of large houses and corporations applies with even stronger force to employes of lesser importance, especially those connected with the management and operation of telephone companies.

Good habits beget a good reputation; and a good reputation, backed by a good character, is the universal passport to success. Brains, industry, devotion to duty are things to be cultivated, but their possession yields neither satisfaction nor reward unless backed by an upright private life.

In a technical journal like this a sermon is out of place, but it will be admitted even by those addicted to questionable practices that it is well occasionally to look upon the serious side of individual life.

There is something higher and nobler than the mere accumulation of dollars, and the fact that genuine integrity is beginning to be more highly prized in an employe than brilliant qualities without moral backing snould convince those standing on the brink to cultivate character rather than to be enslaved by vice.

The present is a good time to turn the proverbial new leaf. The man who makes a good resolution on the first of the year is better, even though he fail, than the self-satisfied sinner or hypocrite who enters upon a new division of time without regret for neglected opportunities. He shows a willingness, at least, of putting himself in harmony with the good and this step in itself is uplifting.

Even the man who tries to be good merely because it pays to be good is better than the fellow who is so steeped in selfish iniquity that he regards neither his own

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future nor the welfare and happiness of those dependent upon him.

If but one hundred thousand business men would make the development of good character a study during the coming year our country would progress so rapidly in ethical development as to attract the attention of the entire civilized world.

COMPETITION IS DESIRABLE

The voice of the people may not always be the "voice of God," but usually it is the expression of the public's common sense.

The citizens of Omaha, Neb., Denver, Col., and Milwaukee, Wis., have been told for years that the telephone service of the Bell Company could not be improved upon, that it was furnished at the lowest possible cost and that the installation of a competitive system would be equivalent to commercial disintegration and a suicidal inconvenience.

Frantic indeed were the appeals made by the literary bureau of the Boston monopoly, but the voters of the three cities named were not misled and spoke with emphasis when called upon to express their opinion at the polls and in the council chamber.

Their utterance was indeed vox Dei, for they spoke for the welfare of themselves, their families and their children; for the preservation of municipal rights and privileges, and against domination by rings, trusts and foreign corporations.

Two to one the voters of Omaha expressed themselves for telephone competition. In Denver they carried the day in the face of the most outrageous opposition. In Milwaukee 45 out of 46 aldermen voted for Mr. Critchfield's Independent franchise ordinance.

Why these famous victories over a well-intrenched enemy?

Because observation had proved to the people that ever since the introduction of the telephone they had received the poorest possible service for the maximum charges; that towns where competition existed enjoyed more efficient and popular service than monopoly-ruled municipalities, and that they were deprived of connection with the users of hundreds of thousands of Independent telephones.

In order to pay exorbitant dividends on its securities the American Telephone and Telegraph Co., the head and front of the Bell organizations in the United States and Canada, has been forced to control the long-distance business of the large cities; and the way in which it spent money during the recent franchise fights convinced the people that to escape the rankest kind of extortion they must stand by the Independent telephone companies.

Competition has done more for the telephone business than for any other industry in the country. In eleven years it has increased the number of telephones from 300,000 to almost 5,000,000. And while it has brought into existence scores of profitable manufacturing enterprises, it has reduced telephone rates to the point where the common people can afford to participate in the advantages and the home use of the telephone.

The men who have secured Independent franchises in the three prosperous cities mentioned did not have to spend much money to carry the day. All they had to do was to tell the truth about the devious ways and extortions of their opponents. The people did the rest.

The Independent telephone cause has been strengthened materially by the conquest of Milwaukee, Omaha and Denver as these cities are centers of trade and commerce; but their business men will reap still greater advantages because the new systems will give them telephone communication with thousand of patrons who have heretofore not had convenient access to their offices and shipping rooms.

The wonderful educational campaign carried on in Milwaukee by Mr. H. D. Critchfield has called forth many compliments and easily marks him as one of the most thoughtful, painstaking and successful Independent promoters in the country.

TELEPHONE TRANSMITTER CARBONS

For some years telephone manufacturers have endeavored to secure a reduction in the duty on carbon disks used in telephone transmitters. It is, of course, well understood that transmitter carbons should be as hard as possible so as to withstand the arcing tendency between the points of contact from the disk to the carbon granules. If the carbon plate is too soft a fine powder is gradually collected in the transmitter and this finally results in packing the instrument so that it will require a general shaking up of the granules before the transmitter will produce satisfactory transmission results. Certain foreign manufacturers appear to be quite successful in making an exceedingly hard carbon and their products are therefore used by a number of telephone manufacturers in the United States. The import duty, however, amounts to 35 per cent. Therefore a case known as the Swedish American Telephone Co. vs. United States, which is an appeal from the decision of the board of the United States general appraisers, rendered in 1904, and which in the near future will be argued in the United States circuit court for the northern district of Illinois, is of material interest to all telephone companies and firms who either import or handle carbon disks used in telephone construction. Through their New York counsel the Swedish American Telephone Co., the American Electric Telephone Co., and many other western importers of crude or unfinished carbon disks have for a number of years been vigorously contesting and filing protests against the action of customs collectors in assessing a 35 per cent, ad valorem duty on carbon disks under Par. 97 of the Tariff Law of 1897 which reads as follows: "97. Articles and wares composed wholly in chief value of earth or mineral substances or carbon, not especially provided for in this Act, if not decorated in any manner, thirty-five per centum ad valorem, if decorated, forty-five per centum ad valorem."

The importers' endeavor will be to have the duty reduced either to 15 or 20 per cent. ad valorem.

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The fact that in a recent case involving the question of the proper classification of carbon sticks used ultimately for electric lighting the United States supreme court held that they could not fall within paragraph 97, as that paragraph must be limited in its application to articles susceptible of decoration (which carbon sticks are not), would seem to strongly support the importers' claim in the present case, because it appears clearly that carbon disks are no more capable of being decorated than are carbon sticks used for electric lighting, and upon like reasoning the former as well as the latter would be excluded from the collector's paragraph 97.

Upon equitable grounds also the importers manifestly have a valid claim, as it was proved beyond question by the testimony recently taken before a referee in the Chicago court case that these carbon disks are nothing more or less than raw material, and that they must be put through elaborate manufacturing processes before they become suitable for their final use as telephone transmitter carbons.

MULTIPLE SWITCHBOARDS IN WARSAW

Some very interesting installations of multiple switchboard apparatus have been made all over the world, and

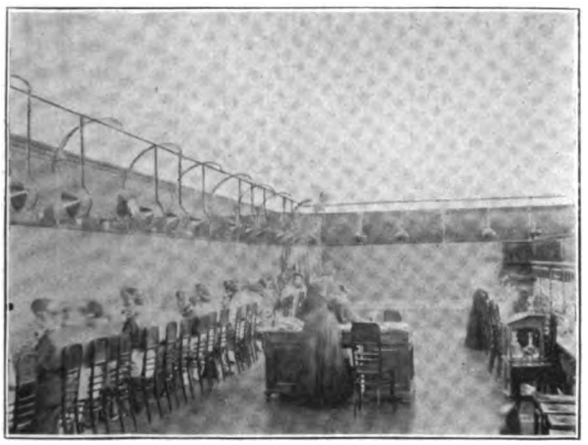

FIG. 1.—Multiple Switchboard.

while the American practice appears to lean toward keeping the ultimate capacities of the multiple switchboards

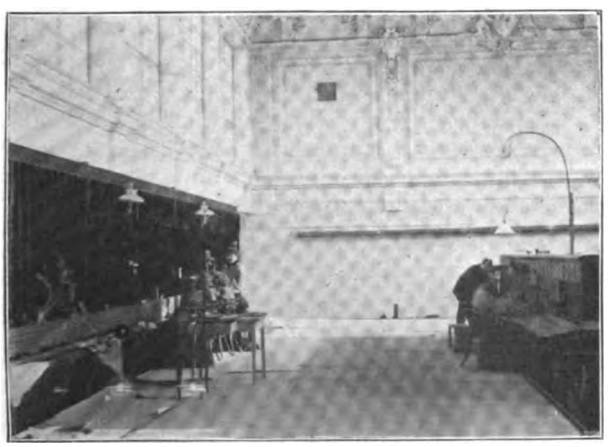

FIG. 2.—35,000 Line Multiple Switchboard.

below 10,000, foreign manufacturers and telephone companies have built boards of considerably higher capacities.

An example of foreign work is presented by installations recently made in Warsaw, Poland.

Fig. 1, which unfortunately does not show the details of the switchboard as clearly as might be desired, illustrates a board having an immediate installation of 10,000 subscribers' lines with provisions for an ultimate of 35,000 lines.

Fig. 2 shows this board in the course of construction and gives an excellent idea as to the space provided for the multiple jacks. Each section, it will be observed, is provided with 3 positions, and the multiple jacks are mounted in 10 panels per section. The front of the multiple pack, which is of the bridging type, is 6 15-16 inches long, which would make about a 3-10 inch center jack.

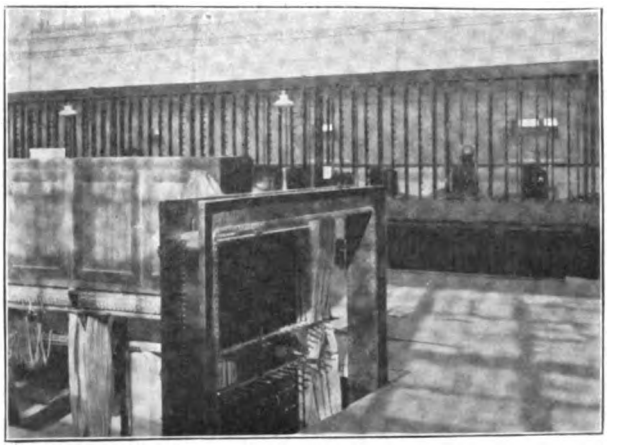

FIG. 3.—Test Panel and Framework

Fig. 3 is also shown and gives an excellent idea of the actual spacing of the multiple jacks. In the illustration it will be observed that there are 5000 multiple jacks installed, leaving space for an additional 30,000 jacks per section.

Official Report of Proceedings

The "Official Report of the Proceedings of the International Independent Telephone Association," forming a handsome book of 248 pages, is now ready for distribution which, besides verbatim reports of the convention minutes and banquet speeches, contains all of the papers, complete reports of states and committees, including standard forms of accounting. The latter makes it especially valuable. In addition, there is a complete list of Association officers, members of committees, and every one in attendance at the convention; also the constitution of the association, plan of organization, etc. Important facts and data contained in addresses, reports and papers, are tabulated by states for easy reference. This feature makes it a valuable handbook of information regarding the Independent movement. The book is a complete and authentic history of the greatest telephone convention ever held, and will be of value to every one connected with the Independent telephone movement. It should prove especially interesting to those who helped by their presence to make the convention a success. Only five thousand copies have been printed, and are being distributed at nominal prices. In order to avoid a loss, it will be necessary to dispose of the entire number. Sample copies will be mailed for 25 cents each by J. A. Harney, Cleveland, O., secretary of the International Association.

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Among the Doers of Big Things

By William Walter Wells

The plans of the syndicate represented by Martin W. Littleton, lawyer, politician and president of the newly organized Beaver National Bank of New York, and S. S. Gregory, one of Chicago's ablest corporation lawyers, for taking over the telephone rights of the Illinois Tunnel Co. and establishing a local and long distance Independent telephone service in Chicago will be carried out.

Whatever else may be uncertain, whatever may be said to the contrary, the Independent telephone companies of Illinois, Indiana, Iowa, Minnesota, Wisconsin, Michigan, Kentucky, Missouri and several other states will be in direct telephone communication with the western metropolis before the year is very old. There's no doubt about it.

Back of the Littleton plans are the Wheelers, father and son, who have much to say about the affairs of the tunnel; Joseph Harris, vice president of the Automatic Electric Co.; E. L. Barber, famous as an Independent operator; Col. J. D. Powers, of Kentucky, first vice-president of the American Bankers' Association; John M. Shaw, president of the Atlantic Telephone Co., of New York. Back of these persons is the banking house of J. B. Russell & Co., of New York, which will do the initial financing of the enterprise. Albert S. Wheeler, Jr., and John M. Shaw both are members of the Russell banking house.

As I stated last month, $2,000,000 of capital can be made available by the Littleton syndicate at a moment's notice, for the purpose of taking over the system installed several years ago by the Tunnel Company. Further capital will be invested from time to time to take care of new construction and to absorb outlying local companies whose plants can be used to advantage in the development of the long-distance system.

The syndicate has not yet made definite announcements as to its plans of organization, but the report is current on La Salle street that a small company will be incorporated in Illinois and a little later a corporation with a capital of $20,000,000 in some other state.

Mr. Littleton, when he appeared before the committee on gas, oil and electric light of the Chicago council the other day, impressed upon the aldermen the fact that the franchise granted to the Illinois Tunnel Co. gives it or its assignees the right to operate a telephone plant in Chicago. His corporation, he added, had not purchased the Tunnel Company's interests, but was acting in partnership with it. From these premises he argued further that the men back of him proposed to go into the telephone business whether granted a new franchise or not.

Twenty thousand instruments are to be installed as quickly as possible, in accordance with ordinance requirements, and the service is to be greatly extended within a short time.

So far, so good. While Mr. Littleton and his associates have been acting as though the telephone situation in Chicago were settled for good and all, the attorneys of the Illinois Manufacturers' Association have had a talk fest extraordinary with various representatives of the Chicago Telephone Co. before the council committee. Much wisdom and an equal amount of irrelevant nonsense was deposited upon the shrine of inquisition. "Pro bono publico" had his say, and the self-sacrificing monopoly entertained tearless listeners with professions of disinterested affection.

Sometimes the scene was moving, indeed. But out of it all came the public understanding that the telephone users had been paying entirely too much for their 'phone service and subsequently a demand for telephone competition that has become loud and spontaneous.

Unlimited service for $90 per year is the shibboleth that is leading the "Independents" on to victory. The Chicago Telephone Co. vows, asseverates, swears that it can't be done. The Tunnel people, the Manufacturers' Association and Bro. A. Kalman, who came up from Kansas City for the purpose of looking after his own ordinance, are unanimous in asserting that $90 per annum and unlimited service will earn all the dividends they care for, all that any reasonable investor should expect.

The Chicago Telephone Co. does not want the little fellows to pay the bills of the big ones and so it is crying out for measured service. Speaking for the philanthropic Bell combination alone, it would like nothing better than unlimited service, but for the sake of the people—God bless the people!—it wants to hear the tinkling of a nickle whenever a call is registered at central.

In the meantime the aldermen have very little to say. Mayor Dunne still stands up for the "natural monopoly" theory, but leans toward the Independent companies to supply the said "natural monopoly." In his public utterances the mayor is emphatic in expressing himself in favor of unlimited exchange of long distance service, even if the Chicago Telephone Co. should be granted a renewal of its franchise. He affirms it to be a condition sina quo non that the outside Independent companies must be granted toll contracts just as favorable as those enjoyed by affiliated Bell companies. And in this stand he is supported by a majority of the council.

But descending from fine-spun theories to actual conditions, I may say, on the authority of a prominent political leader, that the present council will not settle the telephone question. The politicians are getting ready for the spring campaign, there is not the most united feeling between the executive and legislative branches of the city government, and altogether it is thought best by the leaders of both parties to postpone action until April or May. In the interim there will be more talk, more enlightening argument and the public will be more strongly convinced that competition in telephone service is not a bad thing by any means. The leaven of knowledge is working and delay, however annoying, will work to the advantage of the Independent cause.

WHAT IS DOING IN NEW YORK.

Now let me turn from the western metropolis to that of the east where the telephone situation is also one of particular interest. The struggle there is not so much between the Bell and Independent companies, but between two Independent companies—the New York Electric Lines Co. and the Atlantic Telephone Co.

The Electric Lines Co. is a subsidiary of the Great Eastern Telephone Co., and the latter works in conjunction with the Consolidated and Interocean Telephone companies of Buffalo. In the supreme court of New York, Judge Bischoff some time ago held the franchise

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of the Electric Lines Co. to be valid, but decided also that the company could not build its own conduits for wires, but must use the conduits of the Empire City Subway Co. On top of this the appellate division of the supreme court has rendered a decision denying the right of the Electric Lines Co. to a writ of mandamus requiring the commissioner of water supply, gas and electricity of Greater New York to grant it permission to construct telephone subways within the limits of the city.

The New York Electric Lines Co. was incorporated in 1883 under the general telegraph act of 1848, by which it obtained certain general rights, but in order to enjoy them a company first has to secure the permission of the authorities in the several cities and towns to do its business. In October, 1905, the Great Eastern Telephone Co. was incorporated, secured the franchise of the Electric Lines Co. and at once sought permission to construct subways. The application was denied and led to the litigation outlined above. The case will, of course, be carried to the court of appeals, and in the interim the company will continue to perfect its working organization.

The Atlantic Telephone Co., whose affairs are handled by John M. Shaw, taking advantage of the at least temporary discomfiture of its esteemed competitor, has addressed a letter to the Board of Estimates of New York offering the following revised rates to the telephone users of the city: Unlimited business service covering all the boroughs of Greater New York, $120 per year; unlimited residence service, $60 per year; measured service at 5 cents per call, with a minimum guarantee of $30 a year per telephone. With this proposition was sent a letter to this effect: "We ask that these rates be substituted for the ones in the proposed franchise now pending before your board, and we urgently request the board to act upon our application and not permit us to drag through the weary length of months and years in a contest against an opponent already equipped and intrenched and hitherto able to keep out all forms of competition."

The Great Eastern people do not believe in unlimited service in a city like New York and have not been slow to express their opinion. Mr. Shaw, on the other hand, feels confident that unlimited service will pay both in New York and Chicago.

And there you are. The Independent operators outside of the great cities do not care much how the city lines are to be operated, but they are anxious to get prompt connection with New York and hope that the financiers who are engineering the city deals will arrive at an understanding rather than oppose each other.

STARLING SURPRISES IN STORE.

I cannot close this article without a mere mention of the fact that some important deals are on concerning the consolidation of a number of Independent long-distance properties. A correspondent in New York informs me that a Ney of Independent telephony is preparing plans for a gigantic merger and that he is acting under the direction of a famous Napoleon of Wall street. The data now in my possession do not justify me in giving more than a hint of the enterprise, but it is suggested that within two years all the Independent toll lines in America will be under one management.

Independent telephony has assumed such vast financial importance that it has ceased to be a negligable quantity and the year 1907 is destined to revolutionize a number of traditions of the business. And in this general shake-up manufacturers will be interested as well as financiers and operators.

Preservation of Ties and Poles

From the Electro, a technical journal published in Brussels, Belgium, it is learned that the firm of Himmelsbach Brothers, of Freiburg, Baden, in Southern Germany, has been conducting a large number of tests on methods of preserving wood, particularly for use as railway ties. This company has furnished 20,000 wooden ties impregnated with coal tar for the railway through the Simplon tunnel, and has obtained fairly good results with this process of preservation. The method employed consists in passing the ties into hermetically sealed ovens, where they are heated and the air exhausted until the pressure falls to twenty-four inches of mercury or less. Ten minutes afterwards the coal tar, previously heated, is introduced, the exhaustion within the oven being maintained during this time. The oven is then maintained at a temperature of about 105 degrees centigrade by means of a steam coil placed in or beneath it. Heating continues for four hours, after which the air pressure is increased until it reaches two atmospheres. Practically the same process is followed in treating pins and other wooden articles. This method, while not difficult, is not as simple as another now being tried, and known as kyanization. It depends upon the antiseptic properties of bichloride of mercury. It has been shown that a solution containing one part of bichloride of mercury to 10,000,000 of water arrests the development of microorganisms, and one part in 3,000,000 suppresses them. The process consists in preparing a two or three per cent. solution of the bichloride of mercury in water in large vats of concrete. The wood to be treated is plunged into these vats and allowed to rest there for some time. Chemical tests of wood thus treated show but a slight penetration of the solution. It seems to be limited to the exterior surface, but as the preserving action of this treatments lasts for a considerable time, it is possible that the penetration is really considerably deeper, and although too dilute to be indicated by chemical tests, yet it is sufficient to prevent decay. This process was used some years ago, and a table is given showing the results obtained on various railways. On some of these roads poles treated in this way were erected in 1877, of which from thirty to thirty-eight per cent. were in use in 1903. Poles erected in 1883 to 1886 had from eighty-two to ninety-seven per cent still in service. Of poles erected in 1891 and 1892 all are still in good condition. The postal and telegraphic department of Bavaria has had poles treated with bichloride of mercury in service for thirty years, and has found from statistics that the average life of such poles is seventeen and one-half years.

Telephone Guessing Contest

George H. Glass, the enterprising manager of the Citizens' Telephone Co., Pekin, Ill., is a great believer in publicity. His latest plan to keep his company before the people is the offer of prizes of $5 and $2.50 to the two persons who come nearest to guessing the number of telephone calls put through the Pekin exchange on two days in December. Every man, woman and child in the county are interested in the contest, and in the meantime Manager Glass is kept busy installing new telephones.

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Telephone Traffic and the Recording Ammeter

By Charles H. Coar.

Under the classification of "Telephone Traffic" there should be placed all information and statistics concerning the handling of telephone connections in an exchange system. The time consumed in making the various connections, the total number of calls, the calls per hour, the calls per operator, the amount of trunking, etc., must be compiled and tabulated in such a manner as to furnish

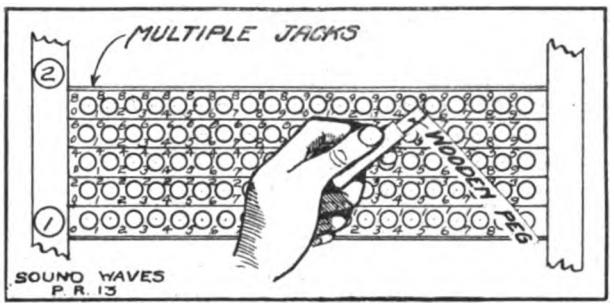

FIG. 1.—Well-known Method of PEG COUNT.

means for determining all the necessary factors entering into the successful operation of a telephone exchange system.

Telephone traffic is similar in some ways to the traffic on a railroad, the seas or highways, being as it is a means for business or social intercourse between various points of a territory.

Unlike the traffic of a railroad or steamship system where the people are transported from place to place, telephone traffic consists solely of transporting or, rather, transferring the conversation of these people who as a rule remain in their respective positions during conversation.

The basis of telephone traffic can then be considered as being composed of the labor involved in transferring or conveying the conversation of the patrons to an exchange system. A telephone load consists therefore of the energy expended in making and completing the necessary arrangements for properly handling the conversations in a system.

An operator completing 800 calls in a day is working under a certain telephone load, one completing 1000 calls per day may or may not be laboring under a more strenuous load because the nature of the loads may be entirely different and one, of necessity, may require more attention on the part of an operator.

For instance, an operator answering flat rate service calls can reasonably be expected to complete more connections than the operator who has to request subscribers to register, drop in money, give their call number, or other similar operations. To use the railroad analogy one kind of load may be composed of passengers on swiftly moving trains, while the other may be considered the slow going but more heavily laden freight train. These are some of the factors which make a telephone load the complicated and interesting study that it is.

The "Traffic Department," in a telephone system, has to do with all matters pertaining to the handling of telephone calls and should constantly endeavor to arrange matters in such a way that the various telephone operations will be accomplished in the least possible time and at a minimum expense. To aid in accomplishing this result, various statistics concerning the number of calls during certain hours, the amount of trunking between the various exchanges if such exist, the number of calls per operator, the average length of conversation, the time consumed in completing a connection, etc., are compiled so that the information thus obtained may be used in determining the various operator's leads and general operating arrangements.

Several methods of counting the number of telephone calls in an exchange are in use. The first method which naturally suggested itself consisted of marking the calls down on a pad of paper which may be specially ruled for this purpose. In this method the operator simply marks down the number of calls as they come in and these sheets are then collected hourly for final tabulation.

The next method some one aptly suggested consisted of the "peg count," from which the recording and tabulation of calls in an exchange has received its name, and it is the custom to apply the term "peg count" to all the necessary operations in general, when involved in the recording of calls.

In taking a peg count, as the name implies, the operator is provided with a wooden plug as shown in fig 1, which she places in the O opening of a multiple jack in front of her position. As the calls come in the operator records them by moving the plug from one jack opening to another in such manner that the plug position always designates the number of calls answered. The totals are collected hourly, at which time the plug is returned to the zero multiple or starting point. The wooden plugs used for this purpose are so constructed as to prevent their being placed too far into the jacks. Sometimes separate blocks of wood or other material provided

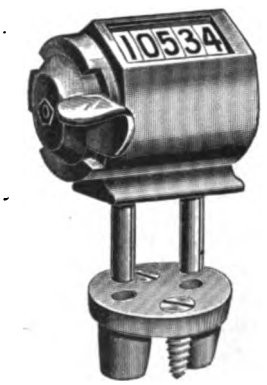

FIG. 2.—VEEDER CALL COUNTER.

with numbered holes are used in preference to the multiple jacks. In either case the method of recording the calls would be practically the same. These methods of keeping count, however, have been rendered more or less obsolete by the use of automatic counters, such as the Veeder shown in Fig. 2. The Veeder meters are made in several styles, the type known as the A. T. & T., is a small arrangment about 2½ inches in diamenter by one inch high. A small plunger extends up from the interior where, when pressed, it engages and operates the counting mechanism.

This instrument reads up to 99999 from which number it automatically returns to zero. The instrument is readable from above, so with this style it is posible for

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X. Y. Z. TELEPHONE COMPANY,

PEG COUNT AND CURVE.

EXCHANGE.

CALLS.		LINES	POSITIONS	A. M. 12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	P. M. 12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	
				0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200		
8000		100	1	5	2	2	0	2	0	2	28	14	100	161	200	109	129			96	139	67	23	28	3	13	4	14 91
7800		120	2	17	10	5	1	2	1	7	49	151	158	179	249	188	235	179	163	147	176	77	58	25		29	4	21 85
7600		100	3	11	20	7	3	0	1	4	30	124	140	253	143	150	142	176	170	203	147	76		25	11	67	3	19 76
7400		100	4	4	2	2	0	1	0	9	14	119	130	127	103	96	12			55	129	113	23	32	18	13	10	6	13 99
7200		120	5	12	4	3	3	0	0	8	23	117	157	204	256	165	1			120	131	228	143	35	38	9	12	3	13 95
7000		100	6	12	6	1	1	0	3	10	42	105	209	98	163	167	197	241	124	30	276					10	18	10	20 12
6800		100	7	3	1	0	0	0	4	2	39	111	228	186	184	144	166	168	223	154	191	213	35				17	9	21 06
6600		120	8	4	2	5	1	0	0	9	50	106	207	155	178	169	144	134	147	165			54	53	43	7	12	11	17 80
6400		100	9	1	4	2	0	3	3	12	53	78	139	103	103	75	124		106	115	106	75	75	47	23	25	5	14 06
6200		100	10	2	5	1	0	0	4	5	36	57	122	132	143	154	124	129	131	104	60	97	35	26	8	26	4	14 01
6000		120	11	3	2	1	1	0	3	1	25	53	198	59		60	138	50	62	99	125	101	15	26	11	20	2	10 85
5800		100	12	3	1	0	0	1	2	12	63	159	202	200	191	118	168	76	111			62	45	23	16	13	5	17 93
5600		100	13	6	1	0	0	1	6	0	42	112	166	111	95		104	112	176	172	106	35	31	23	13	20	9	12 27
5400		120	14	4	6	0	0	0	0	3	57	58	50	101	108	105	109	101	164	68	112	51	40	43	19	26	10	13 49
5200		100	15	5	1	0	0	0	0	5	52	83	115	103	117	149	122	104	21	119	116	60	38	27	11	25	5	15 00
5000		100	16	6	4	3	0	0	0	15	33	112	149	133	185	179	159	128	226	137		82	47	32	15	20	24	17 70
4800		120	17	4	1	0	0	0	0	5	19	119	149	145	94	72	38		150	191	113	51	51	22	3	15	14	16 49
4600		100	18	1	0	1	0	0	1	6	35	81	124	95	78	66	80	98	110	96	75	35	67	42	48	7	5	11 90
4400		100	19	1	0	0	0	1	0	3	22	85	100	114	128	76	111	119	84	112	102	38	35	14	15	3	7	11 77
4200	"Z"	120	20	4	3	0	0	0	1	1	15	103	109	106	91	76	75	118	0	50	14	66	32	44	11	2	6	12 02
4000	EXCHANGE.	100	21	7	3	0	0	0	0	1	32	51	66	55	78	74			96	76	76	60	25	25	14	2	4	9 03
3800		100	22	1	1	2	0	0	0	1	18				66	79	70	85	82	95	91	80	59	37	11	1	2	9 99
3600		120	23	3	5	0	0	0	0	1	24	92	135	98	118		161	102	125	146	89	59	50	41	12	17	0	3 30
3400		100	24	1	11	1	2	0	0	2	6	78	109	118	134	109	111	116	140	101	33	51	62	43	26	7	4	2 76
3200		100	25	6	1	1	1	0	0	1	46	76	54	57	70	56	43	58	57	61	85	41	41	26	11	10	10	7 31
3000		120	26	6	3	0	0	0	1	6	15	74	118	97		93	55	105	106	86	108	45	46	48	14	6	5	11 75
2800		100	27	6	2	0	1	1	0	6	11	89	78	94	71	72	75	86	98	96	79	93	21	17	16	8	3	9 36
2600		100	28	5	2	0	0	0	0	1	2	46	69	79	72	50	57	64	66	60	58	49	22	19	19	6	12	7 58
2400		120	29	1	0	4	0	0	0	1	42	82	28	33	34	54	65	44	62	11	54	45	39	36	11	10	1	5 54
2200		100	30	4	0	1	0	0	0	0	29	60	120	102	72	106	99	90	93	83	130	38	39	16	10	8	2	11 66
2000		100	31	2	0	0	0	0	0	1	15	50	111	86	85	103	116	90	71	103	82	98	21	10	6	5	3	11 05
1800		120	32	2	4	0	0	0	0	3	21	81	93	96	87	86	90	87	77	98	137	78	42	22	10	5	20	11 16
1600		100	33	4	0	0	0	0	0	0	9	57	44	26	45	33	55	58	44	63	38	87	56	20	6	10	8	6 62
1400		100	34	3	1	2	0	0	0	1	17	44	58	52	33	40	37	46	50	40	39	21	46	12	6	5	5	5 58
1200		120	35	6	4	2	0	1	1	4	8	35	31	57	32	61	57	31	24	57	52	29	27	24	36	12	1	8 78
1000		100	36	7	6	3	0	0	0	8	15	30	57	50	50	35	52	28	38	71	31	16	14	6	2	18	5	5 25
800		100	37	3	0	0	0	0	0	2	3	39	60	47	34	43	46	50	44	103	49	34	28	8	9	4	7	6 06
600		120	38	3	0	0	0	1	0	4	5	23	76	74	48	64	65	61	52	59	99	36	33	17	10	3	1	8 19
400		100	39	4	1	1	0	0	0	4	4	30	43	52	45	46	62	48	55	11	56	25	30	11	5	4	2	5 81
200		100	40	5	1	0	1	0	2	6	30	16	36	24	36	16	10	16	11	10	4	12	15	4	5	0		2 64
0		120	41	3	2	1	2	0	0	3	3	12	20	14	27	24	19	15	16	54	10	4	11	9	6	20	3	2 16
			42																									
TOTAL = 47855				143	121	63	16	14	31	185	1120	3464	4294	4173	4097	3735	3816	3705	3446	3476	2840	2036	1586	1074	445	532	447	478 55

SOUND WAVES
PR 14

FIG. 3—PEG COUNT AND CURVE.

an operator to know the number of calls she is registering. The counter being portable is provided with a felt base so as to prevent any scratching of the key board shelf as it is moved about. One other Veeder type is made up in a more compact form and employs a small lever to operate the counting mechanism.

This type is arranged with two split pins which fit into small sockets placed permanently in the switchboard at the various operating positions. There are several other makes of these counters on the market which are equally efficient, some of which are so constructed as to make it impossible for the operator to learn number of

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calls she is recording, a feature which by some managers is looked upon with favor. Counter of this description may be placed within easy reach of the operator so that she may operate it during the time she selects a cord for answering a call. These types of counters in most instances tabulate consecutively until a total of 99999 is recahed when they automatically return to zero. Therefore it is necessary to deduct a previous reading in each instance to obtain the number of calls recorded during a stated interval.

Several cord circuits have been designed for recording the calls automatically when the operators insert a plug into the jack for answering purposes. The idea is to equip the cords in such a manner that a flow of current over the cord actuates an electro magnetic clutch which in turn operates a counter. In some of the arrangements a separate counter is provided for each pair of cords and in other systems the counter is cut into the battery supply leads to the cords at the different operators' positions, so that one counter registers the total number of calls completed over these cords. However the electrical methods have never met with much favor, owing to circuit complications and detrimental effects on the talking service, so that in most instances it is considered the best practice to use the manual counters.

During peg counts, as mentioned before, it is customary to collect the total number of calls from the different operators at stated intervals, and these figures are then arranged upon some suitable form such as is shown in Fig. 3. In this form, space is provided for recording the originating calls occurring hourly and at each operating position during a period of 24 hours. The total calls answered at each position is also given. In the space designated by "Lines," the number of lines to be answered at the respective operating positions is stated and under the heading of "Calls," various amounts in steps of 200 each from zero to 8000 are tabulated, these being used in constructing the total load curve. At the top of this form between the ordinates is another series of numbers ranging from zero to 2200 in steps of 100 each, which are used to construct a curve showing the load at the different operating positions. Referring to chart, fig. 3, it will be observed that the number of calls occurring at each position is given and also that totals are entered stating the number of calls occurring at each position during a period of 24 hours. A grand total of the number of calls answered in the entire exchange is also entered.

In constructing the total load curve "A", the abscissa designate the number of calls and the ordinates the hours in which these calls occurred, so that the curve illustrates in a graphical manner the total number of calls answered at any time during the period of 24 hours. In constructing the position load curve "B," when read properly, the abscissa designate the number of calls and the ordinates designate the number of the different operating positions. This curve then represents in a graphical manner the total number of calls answered at the different positions during the entire period of 24 hours.

It is not always the practice to construct the load curves on the record sheet as has been done in this instance, but this method provides a ready check, as the figures from which the curves were formed are always at hand. The curves in many instances are plotted out on separate sheets of squared paper, but their formation must of necessity be along the same general lines. Curves of this description therefore always tend to bring out very forcibly any perceptible differences in the operating loads as recorded.

The amount of telephone traffic in a telephone system bears a certain proportional relation to the current consumed, or in other words, when a large number of calls is being completed, the current consumption will be proportionately increased. Therefore each call and operation adds a certain amount to the total current consumption.

Owing to this fact it is possible to approximately estimate the number of calls occurring in a system when one has knowledge of the amount of current consumed per connection and the total amount consumed at a given time. This fact rather complicates matters in that it is rare to find two completed connections in which the individual current consumption consumed by each is equal.

The length of the lines or, to speak more correctly, the resistance of the lines, the type of instruments, the method of operation and most important the interval of time elapsing during the conversation all are factors combining in one way or another to alter the total amount of current consumed in an exchange system. Then, further, there is the atmospheric conditions to contend with, for in a large central energy system a damp day will greatly alter the current record, because under a condition of this kind considerable current is dissipated through line leakage, owing to decreased line insulation. The amount of current dissipated in this manner will vary considerably in a short period of time, owing to a re-appearance of the sun, or to the development of a wind, both of which would tend to increase the insulation by drying up the dampness, and on the other hand an increased or prolonged precipitation of rain must necessarily lower the insulation and thus increase the line leakage. Thus the weather becomes an important factor to be considered in calculating the number of calls by means of the current consumption records. It is, however, possible to obtain the average length of a telephone conversation by means of the information obtained through the peg counts and then it is no difficult matter to determine the amount of current consumed by a complete connection.

Knowing the total current consumed in the exchange, making proper allowances for line leakage, one could approximate the total number of calls by dividing the total amount of current consumed by the amount necessary for an average connection. This method would of course result in furnishing the approximate number only, but even such results have many advantages over the more accurate and complicated methods. The fact that the instruments necessary to bring about this condition are not high in price or cost of operation, and the fact that they do furnish at a glance the operating conditions at any given time should commend them for adoption in all central energy telephone exchanges.

(To be continued.)

'Phone Man, Spare That Tree

In the criminal court at Indianapolis, Ind., Judge Alford fined a number of telephone construction men $30 each for destroying trees. The court stated that it had been proved that trees were destroyed almost daily in some parts of the city. Property owners are advocating the passage of more stringent laws for what they consider the wanton destruction of trees in the public highways and on private or corporate grounds.

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The Situation in Milwaukee and Wisconsin

There have been repeated efforts made to secure favorable action from the city authorities of Milwaukee by Independent concerns within the past six years, but that all these efforts have been unsuccessful until now.

Mr. H. D. Critchfield came there last spring and in April incorporated the Milwaukee Independent Telephone Company, with a nominal capitalization of $100,000, and introduced an ordinance in the common council on April 30, 1906. The organization of this company was perfected in June, and is composed of thoroughly representative men of Milwaukee and representatives of

H. D. CRITCHFIELD,
President Milwaukee Independent Telephone Company

the larger Independent telephone interests in the state of Wisconsin. The ordinance, together with two others, was considered by the common council from the time of introduction, either in committee, or by the whole council, until the passage of the ordinance of the Milwaukee Independent Telephone Company, on Monday, November 12.

The present common council of Milwaukee is composed of 46 members, and, as a whole, is far above the average common council for intelligence and integrity. The telephone matter had full and careful consideration and by the overwhelming vote of 45 to 1, the Critchfield ordinance was passed. Hon. Sherburn M. Becker, mayor, was standing at the clerk's desk, pen in hand, while the roll was being called, and immediately upon the vote being announced by the president of the council signed the ordinance and it became a law. The council and mayor responded royally to the public sentiment in favor of telephone competition in Milwaukee.

The directors and officers of the company, all of whom have some financial interest in the proposition, are as follows:

President—H. D. Critchfield, Milwaukee, of the Consolidated Telephone Co., of Buffalo, N. Y.

Vice President—E. A. Wadhams, Milwaukee, president of the Wadhams Oil Co.

Vice President—J. S. Van Nortwick, Appleton, president of the Appleton Paper & Pulp Co., and president of the Fox River Valley Telephone & Telegraph Co.

Secretary—Clifford Arrick, of Indianapolis, Ind.

Treasurer—Howard Green, Milwaukee, president of the Fidelity Trust Co., and president of Jerman, Pflueger & Kuehmsted Co.

Capt. John M. Baer, Appleton, general manager of the Fox River Valley Telephone & Telegraph Co.

W. W. Cargill, La Crosse, president of the W. W. Cargill Co., grain elevators, and vice-president of the La Crosse Independent Telephone Co.

Chas. J. Chapin, Milwaukee, president of the Flint Mill Co., and a member of the firm of Chapin & Co.

J. C. Harper, Madison, president of the Dane County Telephone Co.

B. G. Hubbell, president of the Consolidated Telephone Co., Buffalo, N. Y.

Alvin P. Kletzsch, Milwaukee, secretary of the C. F. Kletzsch Co.

Geo. P. Mayer, Milwaukee, president of the F. Mayer Boot & Shoe Co.

Wilmer Sieg, Milwaukee, of Grossenbach & Co., commission merchants.

Richard Valentine, Janesville, president of the Rock County Telephone Co., and president of the Wisconsin Independent Telephone Association.

Richard G. Wagner, Milwaukee, president of the Wisconsin Sugar Co.

J. B. Whitnell, Milwaukee, president of the Pennsylvania Coal & Supply Co.

The Milwaukee company is backed by the Consolidated Telephone Co. of Buffalo. It is its purpose not only to develop Milwaukee at the earliest practical time, but to develop other points in Wisconsin which are not now occupied by Independent concerns. It is also proposed to extend and develop the long distance business in the state. In all of this work the management will co-operate with existing Independent properties. As to toll line development, there will be completed connections with lines of the Tri-State Telephone Co., which now reach down to La Crosse, Wis., and at no distant day connections will be made with the lines east, through one of the Independent companies now seeking development in Chicago. Owing to the fact that Milwaukee and Chicago have both been closed to Independent telephone interests the development in Wisconsin has not been as general as in many other states, there being, approximately, 45,000 bona-fide Independent telephones in the state, including exchanges at Appleton, Green Bay, De Pere, La Crosse, Madison, Janesville and Racine.

The Wisconsin Telephone Co. is operating approximately 45,000 telephones in Wisconsin on their own lines, of which about 17,000 are in Milwaukee. In addition to these, it has leased to former Independent companies in the state about 23,000 telephones; these being operated by the so-called Independent companies on their own lines, under some sort of a rental arrangement with the Wisconsin Telephone Co. This arrangement is for a short time only, running from one to three years. Many of these organizations will gladly return to the Inde-

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pendent fold when they have a Milwaukee connection. It can be seen from the foregoing that the development of Wisconsin by the Wisconsin Telephone Co. has been very tardy and meagre. This is a wealthy state, containing a very large number of small towns and villages, with well-to-do people, and an unusually large percentage of thrifty farmers. The opportunities for development are excellent.

The new company's plans contemplate the immediate installation of 16,000 lines capacity from one central building, capable of being increased indefinitely, all cable distribution, modern construction throughout, us-

SHERBURN M. BECKER,
Mayor of the City of Milwaukee, Wis.

ing some one of the types of automatic apparatus. It has not yet determined what make of apparatus will be used, but it will probably be one of the newer types of automatic.

The rates range from $60 for unlimited business service to $24 for four-party line, unlimited residence service, with a four-party line, measured residence service, 500 calls per year, or 42 calls per month, for $15 per year, with 3 cents per call in excess of 42 calls per month. The rates average about 35 per cent. less than the present Bell rates for like service. With this reduced charge, and modern service, the company will be able to install at least 30,000 telephones in Milwaukee. This high percentage will be partly due to the fact that there is less squalor and more thrift in Milwaukee than in any city of its size in the United States. Wages are good and every one is employed.

According to an estimate made by the company's engineers, there are more than 15,000 homes in Milwaukee, ranging in cost from $3,000 to $20,000, which have no telephone.

Construction work will be begun within 60 days, and pushed as rapidly as conditions will permit. The directors will increase the capitalization to a sum sufficient to meet the cost of initial installation and future requirements.

Milwaukee now contains a population of approximately 330,000 people, with an assessed valuation for taxation, for 1906, of more than $200,000,000.

Mr. Critchfield feels much gratification over the results already achieved as Milwaukee has withstood the efforts of Independents for so long a time. This is about the last large city, with any considerable adjacent territory unoccupied by Independent telephone lines, in all the middle west, and he believes that the development of Milwaukee and adjacent territory will give an additional impetus to the Independent efforts in Chicago.

The News by Telephone

Budapest, the capital of Hungary, has the only newspaper in the world which telephones instead of printing its news. Free of cost this journal, which is called the Hirmondo, installs a telephone in the subscriber's house or flat, and from its central office the news is announced by a clear-speaking elocutionist, who precedes each item with a general call. It is an all-day service, beginning at nine in the morning, when the correct time is sent to all subscribers. The program of public events, meetings and the like for the day is announced and at regular intervals the movement of prices on the stock exchange. At 12 o'clock the news of the day at home and abroad is telephoned to subscribers in a distinct and succinct narrative. To while away the post-luncheon hour the subscriber may take up his receiver and listen to the recital of an original and complete short story by an accomplished raconteur. From 4:30 to 6:30 subscribers are in electrophonic connection with the musical performance of the famous Houved military band. From seven until 11, on five nights in the week, the subscriber, sitting in his own house, may enjoy the music and singing of the Grand Opera house. On the other two evenings in the week he commands the performance of the Gypsy band at Budapest's leading cafe. The cost of the complete service, including all extra attractions, is not quite one dollar per month.

National Wood-Testing Laboratory

A number of representatives of manufacturers and users of forest products met the officers of the Forest Service at Washington recently to discuss plans for the establishment of a wood-testing laboratory. A resolution was adopted to petition the congress for an appropriation to establish such a laboratory, the same to be under the control of the Forest Service. The telephone men of the country, to whom the establishment of such a laboratory means much, should correspond with their congressmen and senators, urging the importance of the matter. Dr. Thomas E. Will, secretary of the American Forestry Association, 1311 G street, N. W., Washington, D. C., has charge of the prelininary work.

Prosperous New York Company

The Oswego County Independent Telephone Co., Fulton, N. Y., has completed its complicated underground work and is now finishing pole line work and interior wiring, preparatory to installing a thoroughly modern switchboard in the spring. The make of the board has not yet been determined, but it will be of the best. The company's three-story building is well under way. The first will be a banking floor, the two upper floors will be occupied by the telephone company. The manager, M. H. Powell, is to be congratulated on the progress made under his direction.

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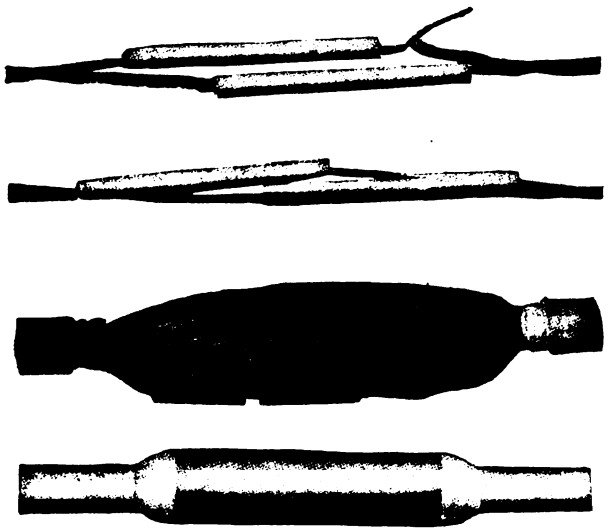
The Art of Cable Splicing

By W. A. TAYKOR

THE ART OF CABLE SPLICING—Across page
BY W. A. TAYLOR.

In many exchanges there are men who know how to go at the work of splicing cable and their work will be all right, but there are very many places where there are no skilled cable men and work done by the local force is very apt to bear the earmarks of the amateur. Except for very short cables the dry paper insulation should be used, and that requires very careful handling to prevent injury to the insulation. Paper is very apt to absorb



FIGS. 1, 2, 3 and 4

moisture rapidly and as a little moisture is very detrimental the necessity of intelligent handling is apparent.

It is doubtful whether the ordinary lead-covered splice is to be recommended in the very small exchanges, because of the difficulty of getting men who are familiar with the making of plumbers' wiped joints. Even where there are plumbers handy, it is sometimes impossible to get them to go up on a cable, especially when the joint is between two poles. There are a number of very convenient contrivances on the market now which do away with the necessity of wiped joints without in any way endangering the cable. Besides the convenience of attaching, these appliances enable one to make changes in the distribution very easily and without destroying the splice.

For permanent work there is nothing that is superior to the old-fashioned wiped joint, when it is made right, so there will be no immediate danger of this style of splice being abandoned at once.

When the cable is received from the factory it will be found that the ends are carefully soldered shut. If the cable is not so received, it should not be taken from the railroad, for either the factory has been careless or the cable has been injured in transit. The ends should be kept carefully sealed till the time the splice is to be made. In pulling in the cable the ends should be allowed to lap a distance from twelve to twenty-four inches, according to the size of the cable. A small cable need not lap as far as a large one, as the splice is much shorter.

In starting to make splices work should start at one end and additional sections added consecutively. The end of the first section or piece of cable should be opened first for about eight or ten inches. The end should be immersed in hot paraffine so that there may be no absorption of moisture and then the insulation of the wires should be stripped from them for a distance of four or five inches. The bare wires are now twisted together and insulated so that they cannot get into contact with the sheathing or other conductors. After this is done, carefully cover the end with tape so that no moisture can be absorbed. You are now ready for the first splice.

You will need the following as materials for making the splice:

1 gasoline furnace, and gasoline;
1 solder melting pot;
5 pounds solder;
1 pipe scraper;
1 heavy knife for cutting sheathing;
1 knife for stripping insulation;
6 pounds paraffine.
1 melting kettle for paraffine (1½ gals).
1 ladle for paraffine (1 pint).
1 lead sleeve;
1 mallet;
10 yards muslin strip;
Paper sleeves, one for each conductor.

In addition to the above items there will be required a telephone receiver, two cells of dry battery and sufficient wire for making the connections.

Before beginning on the splice open up the end of the second section of cable and short-circuit the wires like you did on the end of the first section.

To facilitate work on the splice the furnace should be started and the paraffine started to melt first; then take the sheathing off the cable far enough so that the ends shall be from eight to eighteen inches apart, depending upon the number of conductors in the cable. By this time the paraffine in the kettle will be hot. The paraffine must be hot enough so that the temperature is considerably above the boiling point of water. When hot enough there is usually a thin vapor looking like smoke hanging above the liquid. A piece of moistened paper dipped into the paraffine will hiss and bubble violently when it is hot enough. Be very careful that the

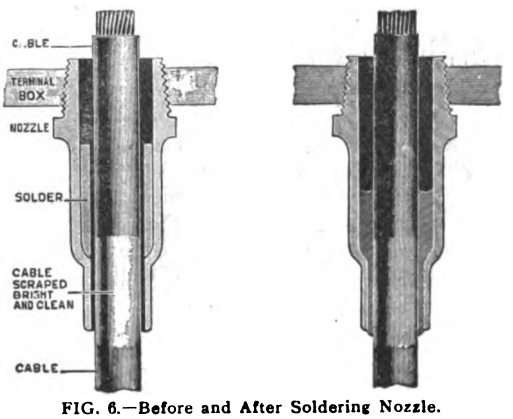


FIG. 6.—Before and After Soldering Nozzle.

liquid is not heated to the flash point or you may have a bad fire. It is always a good idea to have a cover that fits tightly over the kettle and then if the paraffine catches fire it can be quickly smothered by putting on the lid.

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Dip the ends of the cable into the paraffine and hold them there till the bubbles cease to rise, then lift them out and drain off the surplus paraffine. You can then commence the splicing. First slip on the lead sleeve and run it back on the cable far enough so that it will not be in the way. Do not forget this sleeve or you may find that you will have to undo all the work in order to have a sleeve over the splice.

Now untwist the cable so that all the pairs will be separated, but do not separate the wires of the pairs from each other. It is very important to preserve the pairs. Bend the wires back upon the sheathing of the two cables so they will not be in the way.

Connect the one side of the receiver to the battery and the other side of the battery to the cable sheathing of both cables. With the remaining terminal of the receiver touch one conductor in each cable. A sharp

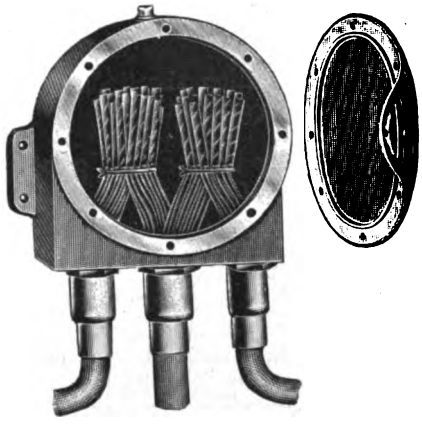

FIG. 5.—Junction on Splicing Box.

click in the receiver will indicate that there is one of the conductors grounded on the sheathing. You will hear a click even in a good cable, but not nearly so apparent as when there is a ground. After this test connect the battery wire to one of the conductors and then touch each of the other wires with the receiver terminal. You should get a sharp click in each case and, if you do not, the conductor upon which you do not get it is open. The open conductor should be thrown out and not spliced until the last thing and then the bad ones in each cable should be connected together. If the conductors are spliced without regard to their condition a good set of wires might be spliced to a bad set in the second cable and bad pairs in the first connected to good ones in the second. Thus, should there be a number of sections of cable to be connected together, there would be a large number of bad conductors after the work is finished. If you have found any grounded conductors in either cable you should separate the wires at the short-circuited end and test each pair separately with the sheathing and in that way find the bad wires. There is no particular harm done if there should be one or two bad pairs in a cable for the manufacturer put in several extra pairs to provide against this difficulty.

After you have satisfied yourself that the conductors are all right commence at the center of the core of each cable and take out one pair from each. Cut the wires so that the splice may commence at the end nearest one of the ends. One wire in each pair should be cut shorter than the other so that when the joints are made they will not be opposite each other. Slip a paper sleeve over each wire of one of the pairs, then skin the wires back about an inch and a half from the ends, cross the ends and then twist them together tightly. The result will look like figure 1 if the work is done right. The paper insulation on the wires is of two colors and in all cases like colors should go together. When the wires are connected together the ends should be bent down parallel to the wire and the paper sleeves should then be slipped over the connections. The result will then look like figure 2.

The next joint should be made a little farther along the splicing space so that they may not accumulate in a bunch. Keep on splicing wires in this way, being sure to stagger the joints uniformly till all are spliced.

Now you are ready for your hot paraffine again. Place the kettle under the splice and with the ladle pour the paraffine through the splice till every bit of the moisture is gone. Then wrap the muslin strip tightly around the splice so as to confine the bunch of wires to the smallest space possible. Then once more boil out the splice to take the moisture out of the bandage. The bandage should be two to three inches wide for permitting the most convenient working.

An experienced splicer will know whether he has boiled out the splice sufficiently if he is working under favorable conditions, but there are times when it is not possible to tell. The work may be done in a high wind and in cold weather and the paraffine will not stay hot long enough to do effective drying. The only absolutely safe way to tell then is to attach a sensitive galvanometer so that the insulation may be measured. On some jobs a galvanometer reading is always taken before a splice is closed for then there will then be no time lost in reopening splices.

Figure 3 shows the finished splice before the muslin wrapper is put on. The small paper sleeves are shown distributed along the entire length of the splice.

The splice is ready for the lead sleeve. Before putting the sleeve in position heat it thoroughly so that if there should be any moisture present, it will be driven off. When in position over the splice, the lead sleeve will extend over on to the sheathing about two inches at each end. The sleeve should be large enough so that it will slip over the splice easily. A tight fit will result in scraping the covering off of some of the conductors.

With a mallet pound down the ends of the sleeve till the edges fit closely to the sheathing. Then with the pipe scraper scrape off the surface of the sheath for a distance of about an inch, and also the part of the sleeve that is bent over. Cover this surface well with tallow or stearine so that the surface will stay bright.

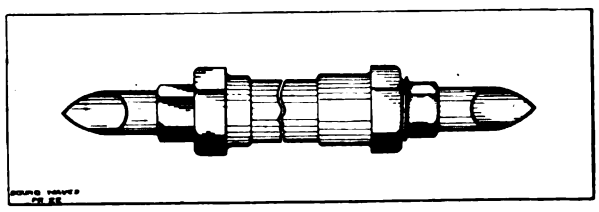

FIG. 7.—Cable Splicing Sleeve

On each side of the scraped space wrap paper so that the solder cannot run out too far and make a ragged joint. You are then ready for your wipe.

The solder used for the wipe is not generally the half tin and half lead ordinarily used for soldering wire, but there is a greater portion of lead in it. The proportion is usually sixty per cent lead and forty per cent tin.

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The half and half can be used, but it is not so easily handled. The ordinary solder can be taken and some of the lead sheathing added to help out.

There must be positively no pin holes in a wiped joint and cracks are inexcusable. A considerable amount of trouble comes from not working the solder sufficiently to get the surface of the lead well tinned; the result is that moisture will creep in under. Sometimes the splice will be moved before the joint is hard. A very small crack is caused in the solder which can hardly be seen, but enough water will get into the splice to saturate the insulation. It takes several minutes for the solder to get thoroughly hard.

One point was overlooked in the explanation of making the splice. It is always best to boil the paper sleeves thoroughly in paraffine before using them. They contain a large amount of moisture and it is hard to get it out after the splice is made.

After the cable splice has been finished the work should look like figure 4. It is seen that both of the wiped joints are smoothly made and that the whole looks very neat.

As mentioned in the forepart of this article, there are a number of conveniences which make the splicing of cables very much easier and so that less experienced men can do the work. Figure 5 shows a junction box which does away with the making of a Y splice. It is made so that the cover may be taken off at any time and test or changes made. The illustration shows three cables entering; it is not necessary to have the three attachments or nozzles, but two only can be used and the extra one closed. Where the splices come at the poles this box is very convenient. Of course the conductors in the cable must be handled just as carefully as with the ordinary splice or there will be trouble. The great advantage of this box is that there need be no wiped joints and all wires may be reached. The cables are slipped up through the bottom of the box and a piece of solder cast in the shape of a hollow cylinder is then dropped down inside the nozzle and around the cable. The flame from a blow torch is then directed against the outside of the nozzle till the solder melts. To keep the solder from running out, tape is wrapped around the cable and nozzle. Figure 6 shows the details of the self soldering joint, one view showing the parts before soldering and the other after the parts are soldered.

Figure 7 shows a brass cable splicing sleeve. This arrangement takes the place of the ordinary splice and can be placed anywhere in the cable lead. It has very much the same shape as the old fashioned splice but it may be opened at any time by a simple process of unscrewing the parts. This splice may if desired be wiped to the cable sheath, but it is arranged so that there need be but a narrow soldered seam around the edge of the nozzle.

One of the later arrangements for use in making splices is shown in figure 8. This consists of a lead sleeve closed at one end and at the other there is a brass ring screw threaded on the outside. This sleeve screws into another ring that is internally threaded. This ring holds a gasket that is drilled with holes which are the right size for taking in the cable. The gasket is usually furnished without holes in it so that any size of cable can be used. The cables are first drawn through the holes in the gasket, then the gasket is placed in the threaded ring against an inwardly projecting ring. Melted solder is poured into the top of the ring around the cables. The cables should be scraped before the solder is poured in so that the solder will adhere. The armour is then removed from the cable and the splice made according to the usual methods. After completing the splice, a rubber ring is placed in the threaded ring against the gasket and the sleeve screwed tightly against it. This will make a water and air tight joint which can be opened at any time to make changes. The illustrations 9, 10 and 11 show the different steps taken in the making of this splice.

It must at all times be remembered that if great care is not taken there will be trouble in the splices. Where the cable is short there is not so much necessity of having extremely high insulation, but on a cable lead where there are fifteen or twenty splices the trouble of poor work is increased that many fold. In systems where there are no open wires it is not unusual to have as many as forty taps. If the insulation resistance at each of these taps was as low as one meg-ohm, the insulation resistance of a cable with forty splices will be only 25,000 ohms, not counting the insulation of the rest of the cable. A good cable should not fall below 150 meg ohms in insulation resistance, and it is not very unusual to have the resistance ten times that figure.

FIG. 8.—Cable Splicing Sleeve.

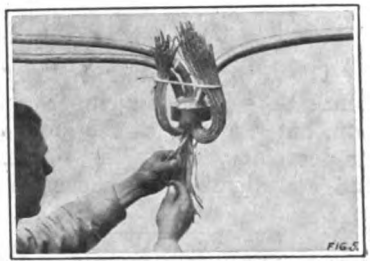

FIG. 9.—Making Splice.

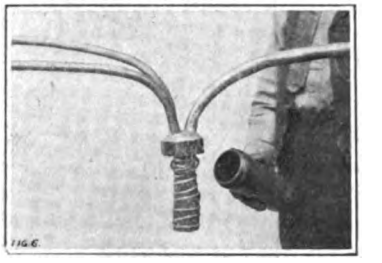

FIG. 10.—Before Closing Up Splice.

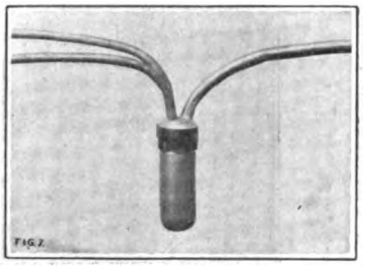

FIG. 11.—Complete Splice.

Where it is necessary to do any soldering in a splice be sure and have nothing to do with any acid, salts or soldering paste or you will be sorry. If you want to solder against lead use tallow or stearine. Do not solder the joints between the wires, a tight twist will be all that is necessary. If necessary to do soldering on the wires, use nothing but the pure resin.

If acid ever gets into a cable you will have a very

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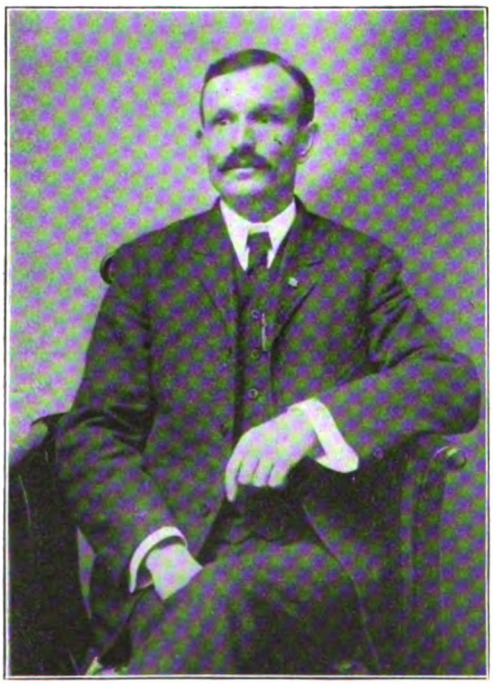
difficult time to locate the trouble. Instruments will be of no avail in locating the difficulty.

Some years ago the writer had a case of cable trouble to locate which was very obstinate. The figures would not work out twice alike. The results showed all the way from a distance of ten times that of the length of the cable to a minus quantity. In fact there was a variable electo-motive force in the conductors themselves. The only thing left to do was to go over the cable and examine it throughout its whole length or till the bad place was found. There was one place in the cable that had been soldered up and as there had been no record of a case of trouble there we opened up this hole again and saw that the insulation had turned green. Acid had been used and it had run down into the insulation and caused all the trouble. The cable had to be cut in two, all the defective insulation had to be removed and a short piece spliced in. This meant a long job, all because of a little ignorance on the part of some well-meaning workman.

Virginia's Fight for Freedom

The Virginia State Independent Telephone Association is the youngest member of the International Association, but it is one of the most vigorous and enthusiastic. Its secretary, B. L. Fisher, of Rocky Mount, Va., has had considerable experience with the peculiar methods



B. L. FISHER,
Secretary Virginia State Independent Telephone Association.

of the Bell Company, and to his determination and indefatigable labor the organization of the Virginia association is largely due. Why he and his associates entered into the fight against the monopoly is more fully explained by Mr. Fisher in the following letter:

"Why did we enter the fight, was it for the dollars and cents only? I most heartily say, NO. There is a principle that we are fighting for. Why did our noble forefathers enter the battlefield and bleed and die? They did it to give us this noble freedom that we enjoy and which such monopolies as the Bell wish to deprive us of.

"Shall we as a free and independent people stand idle and allow a monopoly such as the Bell to dictate to us as to what we shall do and what we shall not do, even to the extent of how deep we shall go down in our pockets in order that we might obtain the every day convenience of the great invention, the telephone? I say NO; the people at large say, NO. Only stop and look about over our land and see the general uprising of the people and you will be convinced of the above facts. If it were not for this uprising of the people where would this oppression stop?

"Every man or woman or child that has true red American blood coursing through his veins cannot help but feel proud to see this set of arrogant oppressors being turned down by the hundreds of thousands of people all over America. We as Independent operators have stood separate in Virginia too long. We have much before us to do, but we are in the fight for keeps because, as I have said, we are fighting for a principle, for our rights and for that for which every true American stands.

"We are fighting the fight of the people and the people are with us. There is a fine opening in several of our largest cities for Independent systems, they being occupied only by the monopoly.

"We hope in the near future to see each of these cities controlled by the Independents, and will not be content until every city, town and village in this grand old state enjoys the benefits that can be derived only from well managed Independent systems."

Concrete Telephone Pole

A concrete telephone pole, which may revolutionize the pole business of the entire country, has been designed by W. M. Bailey, superintendent of the Home Telephone Co., Richmond, Ind. The pole is 30 feet in length, 12 inches square at base and 6 inches at top, with the corners knocked off the entire distance, making it a perfect octagon, at top almost square, with corners cut off at the bottom. The necessary pole steps, cross-arm bolts, brace steps, etc., were placed in position before the cement was poured. The proper form was made of wood, and after four half-inch twisted steel rods had been placed near the four corners and bound together with wire wound in a spiral form the entire length of the pole the form was filled with a good grade of concrete and well packed in. The pole has a decidedly pretty appearance and is perfectly straight. It was set on Thanksgiving day, and Mr. Bailey is now making the necessary tests as to tensil strength. If the experiment proves a success telephone and telegraph companies will substitute concrete for wooden poles. Mr. Bailey is of the opinion that the concrete poles can be built a trifle below the cost of wooden poles, and once they are placed in the ground will not need to be replaced.

Modern Exchange at Syracuse, N. Y.

The system of the Independent Telephone Co., Syracuse, N. Y., one of the holdings of the United States Independent Co., has been thoroughly modernized under the direction of John B. Pierce, general manager and chief engineer. Rebuilding operations were begun in 1905. Now 6,000 lines are installed; 35 miles of underground; multiple cable distribution throughout. The company has recently completed copper toll lines to Auburn, Utica, Pulaski and Binghamton and connecting the Commercial Union with the Interocean lines.

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The Law and the Telephone

By GEORGE H. MURDOCK, JR.

ERECTING POLES ON HIGHWAYS

Laws 1903, p. 350, Sec. 4, provides that, when a telephone company desires to construct its lines on a public road or highway, it shall give the highway commissioners having jurisdiction ten days' notice of such intention, and that such commissioners shall within ten days thereafter specify the portion of the highways on which the telephone line may be placed, and that it shall be the duty of the telephone company to construct its line in accordance with such specifications. *Held* that, where highway commissioners failed to specify the portion of the highway to be used by a telephone company as prescribed, the telephone company in placing its lines acted at its peril, and was bound to so place them as not to interfere with the use of the highway by the public, or suffer the penalty prescribed for obstructing a highway.

Interstate Independent Telephone & Telegraph Co. vs. Town of Towanda, 77 N. E. (Ill.) 456.

CUTTING TELEPHONE WIRES—LIABILITY OF COMPANY

The Cumberland Telephone & Telegraph Company is a corporation of the city of New Orleans, while C. C. Barton resides in the parish of Assumption. The telephone company and Barton entered into a verbal contract whereby the former obligated itself to install a telephone in the latter's residence and to place him in communication with Napoleonville and Donaldsonville, as well as within reach, by telephone, with all of the company's subscribers in Assumption parish.

The charges therefore were to be $5.00 per month, which Barton has always punctually paid; and, in addition, he furnished, free of charge, all poles for hanging the telephone wires in the company's exchange at Napoleonville to his own residence. Barton applied for a writ of mandatory injunction against the company, saying in his application: that he has complied with his obligations under the contract, but that the company, without notice to him and quite unexpectedly to him, maliciously severed the telephone wires and disconnected his home from the company's telephone system, and thereby deprived him of the telephone service which he had enjoyed and to which he was justly entitled. The contract it is alleged, was entered into for a specific time, which is stated in the petition.

In the proceedings on this application, the question of jurisdiction arose and this had to be determined according to the amount and character of the damages the complainant would be entitled to; and whether the damages were limited to those growing out of the contract or also included those growing from the tort or wrong committed.

Upon this question the Supreme Court of Louisiana said:

"As relates to damages, and that is the only question before us, it does seem that plaintiff has alleged sufficient to sustain his action. He alleged, in substance, that he supplied defendant with the poles to string the wires and connect his residence with different places, and that defendant, without warrant or authority, had illegally and maliciously disconnected the telephone service installed in his home by cutting the telephone wires. From this it is manifest that there was an act of commission alleged, a violence done to plaintiff's right, the taking by defendant of the law in hand, and unlawful cutting of wires, and the destruction of a use to which plaintiff had acquired the right. It was a trespass upon the right of property for which plaintiff was paying, a personal wrong committed on his premises or near them in such a way as to be an injury upon plaintiff.

"Here are the issues briefly stated. A corporation engaged in a service to the public bound itself by contract with another. Under this agreement the latter furnished a considerable part of the material used.

"Suddenly, without warning, the corporation destroys the use, by destroying part of the property.

"A party to a contract can refuse to continue performance of an unexpired contract and take his chances in an action ex contractu that he will not be made liable for damages.

"On the other hand, a party to a contract cannot put an end to a contract by sudden malicious destruction of the property by committing a trespass, as alleged here, without taking the chances of an action ex delicto for damages."

40 So. (La.) 590.

MUNICIPAL REGULATION OF RATES

In an action by Horton D. Wright against the Glen Telephone Company it appeared from the complaint that the defendant is a telephone corporation operating its lines in the city of Gloversville, Fulton county, and the adjoining places. The plaintiff is a practicing lawyer in the city of Gloversville. The complaint fairly alleges that the defendant refuses to supply telephone service to him at reasonable rates, and refuses to give him telephone service except upon the payment of $3.50 per month, while $2 per month is a reasonable charge for such service, and that defendant unjustly and unlawfully discriminates as between him and members of other professions and other places of business, and seeks to charge him an excessive rate, more than is charged to other professions and other places of business to which like service is supplied. Before the action was brought service had been rendered, but was suspended at the time the action was brought. Plaintiff sought the mandatory injunction of the court to compel them to furnish such service at a reasonable rate to be fixed by the court.

To this complaint the company answered that it did not state facts sufficient to constitute a cause of action and New York Supreme Court, Appellate Division, rendered the following opinion:

"Plaintiff's contention, that he is entitled to service upon the terms stated in the so-called franchise given to the defendant from the city of Gloversville, is, we think, not sound. The right to construct its line along and upon the highways is given by the statute. Section 102, c. 566, p. 1152, of the Laws of 1890. By section 41, c. 275, p. 533, of the Laws of 1899, the municipal authorities of the city of Gloversville are only given the right to regulate the setting and stringing of telegraph, telephone, electric light and power, and other poles and wires in said city.' The power of the municipality is simply a police power, to be exercised for the protection of the citizens. It can not use that power for the purpose of

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forcing a contract with a telephone company for benefits to itself or to the citizens. In Farmer vs. Columbiana County Telephone Company, 72 Ohio St. 526, 74 N. E. 1078, the headnote reads as follows:

"'Telephone companies organized in this state obtain power to construct their lines along the streets and public ways of municipal corporations from the state by virtue of sections of the Revised Statutes (3454 to 3471-78, inclusive), and not from the municipal authorities. The latter have the power, under section 3461, to agree with such companies as to the mode of use, and upon compensation for such use, but not beyond what may be necessary to restore the streets to former state of usefulness. They have not power to exact or receive compensation by way of free telephone service for themselves or for citizens, or to fix rates for telephone charges. Where such power to so obtain free service and fix rates is attempted to be exercised by the passage of an ordinance incorporating such provisions, the company will not be required to adhere to them by a court of equity by mandatory injunction, even though it be shown that the rates agreed upon and incorporated in the ordinance were so fixed at the solicitation of the company and that the company thereby obtained a benefit which it would not have otherwise obtained in a mode of use of the streets more beneficial to it and more inconvenient to the public.'

"From a reading of the case it appears that the statutes under which this case was decided did not differ materially from the law of our own state. In fact, it can make no contract with the company which could not be altered by a subsequent municipal council if necessary for the protection of the citizens. If this be sound law, the franchise can in no way be a contract binding upon the defendant as to compensation for service for lack of consideration. The defendant cannot be estopped because it has complied so far with terms with which it was not required legally to comply. No harm has been done this plaintiff or the municipality, and I can see no element of estoppel in any act done by the defendant under the terms of the so-called franchise."

99 N. Y. S. 85.

ADDITIONAL SERVITUDE ON HIGHWAYS

The construction and operation of a telegraph and telephone line upon a rural highway is not a highway use, within the purpose of the original dedication of the highway, but is a new use, and constitutes an additional servitude upon the fee of the abutting owner for which he is entitled to compensation.

Cosgriff vs. Tri-State Telephone & Telegraph Co., 107 N. W. (N. D.) 525.

ABANDONMENT OF FRANCHISE

Plaintiff telephone company refusing to furnish telephones at a statutory rate, defendant city repealed its original franchise ordinance, whereupon plaintiff brought suit against the city for damage sustained in the destruction of its property, and the city instituted suit for the removal of poles and wires from the streets. The controversy went on until 1887, when a stockholder of plaintiff company, whose subscribers had been reduced in the meantime to 37, sought and obtained a new franchise ordinance, which provided that it should terminate after fifteen years. Immediately thereafter plaintiff began to rebuild its exchange and system, and the litigation between plaintiff and the city was allowed to lapse. Held, that plaintiff thereby accepted the franchise of 1887, and was estopped thereafter to claim any further rights under its original franchise.

Cumberland Telephone & Telegraph Co., vs. City of Evansville, 143 F. (U. S. C. C. A., Ind.) 238.

NEGLIGENCE OF SUBSCRIBERS

Where the contract between a telephone company and the proprietor of a building in which a telephone was located required the company to keep it in order, and on receipt of a request from the building for the repair of the telephone, plaintiff, a servant of the company, was sent to repair it, and while in the elevator shaft making the repairs he was injured through the negligence of defendant's servant in operating the elevator, the facts warranted a finding that the servant was injured in repairing the telephone upon the invitation of defendant, who owed the servant protection.

Rink vs. Lowry, 77 N. E. (Ind.) 967.

EMINENT DOMAIN

A petition to condemn a right of way or easement over defendant's land for a telephone line, describing the right sought to be condemned as a "right of way or easement for the plaintiff's line of telephone wires and fixtures along, across, and upon the following parcels of land," etc., was fatally defective for failure to describe the size, number, and location of the poles intended to be erected, their height, ets., and the manner in which the wires were to be strung.

Suffolk County Telephone Co. vs. Gammon, 99 N. Y. S. 295.

JOINT LIABILITY

Due care requires of those using wires or conductors of electricity so to place and maintain them with reference to similar conducting agencies that dangerous contact be not probable; and where wires maintained concurrently by different parties are so erected or strung that they are likely to touch, possibly with destructive consequences, either or both parties must make efforts to remedy such dangerous condition, and if an injury occurs through the neglect of such duty, both are liable.—Simmons vs. Shreveport Gas, Electric Light & Power Co., Limited, 41 So. (La.) 248.

NEGLIGENCE OF FOREMAN

Where a foreman of a telephone company knew that an electric light company which used the same poles for its wires, turned on its power at four o'clock in the afternoon, instead of five, as it had previously done, he was guilty of gross negligence in failing to give a lineman specific warning as to this fact, though he warned him to be careful.

East Tennessee Tel. Co. vs. Carmine, 93 S. W. (Ky.) 903.

Junk Value of Copper Wire

The great advance in the price of copper is well illustrated in the statement of General Manager McVey, of the United States Telephone Co., in regard to the wrecking value of that property. Mr. McVey says that the copper wire alone owned by the United States Telephone Co. if taken down from the poles and out of the conduits and sold at second-hand, would realize more than sufficient to retire the entire issue of United States Telephone bonds at par.

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When Number 13 Was Lucky

BY MISS T. BARNES

It is well sometimes in the hurry and stress of life to pause and let memory draw aside the curtain of the past and place before us, in panoramic view, some story in the story of our lives. Whether painted with the rosy hue of life or the sombre shades of sorrow and death, we are always better off for allowing ourselves this retrospection. It is but comparing the past with the present, and often makes the future better.

Memory takes me back this evening, and draws from its storehouse, a picture I love to dwell on. It is the first picture of the little story I am going to tell you. A doorway of a busy telephone exchange is the frame. A slim girl of 18, with upturned smiling face, surrounded by soft little curls, which seem to nestle lovingly to it.

The Picture in the Frame.

This is the picture in the frame. She is speaking to my assistant, and my natural conclusion, which was a correct one, is that she is applying for a position.

The picture is replaced by another. She is sitting among us, with little hands folded, which is "correct position" when not busy. It is a dull, sultry afternoon in July. The "lights" come drifting in like fireflies, just at dusk, and it is as uncertain where they will light next. She is watching for the coming of her signals just as attentively as though she were very busy. The electric fans with their soft whirr do not seem able to stir the intense heat. How we all longed for 5 o'clock. The weather forecast said "Rain."

We did not want rain, for we were to have our annual picnic that evening.

The picture is replaced by another. The retiring room, filled with baskets of good things to eat and with girls. The girls are standing in groups or looking disconsolately out of the windows, as the rain dances saucily against the panes. She comes into our midst like a rift of sunshine through a cloud on a dark day. The grumbler stops grumbling.

"Girls, I have a plan," she says, smilingly. "Let us take the car out to the park, spread supper in the pavilion and if it is still raining after supper we will go down to grandfather's, half a mile from the park and spend the evening with music and dancing; if it stops raining we can have our boat rides also."

The next picture is a confused mass of faces, a confused sound of laughter and talking in the pavilion. The moon peeps through the clouds and decides to stay.

The picnic was a success.

As the picture is fading from view I pause, before looking again, to think of the influence that one sunny dispositon can have over forty girls. She ruled them with her smiles. She made them ashamed to do a selfish act; they never grumbled in her presence. They imitated her unconsciously at their work. Her example was the best. Her subscribers missed her when she was away. She had such a soft, pretty voice, that sounded pleased to be of service and sorry when she was unable to "raise" a party. Although she never changed a phrase in speaking to the subscriber enthusiasm and interest in her work were expressed in her voice. The subscriber never suspected that she could only answer with certain phrases, but he soon knew that he could not draw her on to talk.

I see her next in the operating room on just such another warm day, one year later. How we had all grown to love her! The grumbler had forgotten to grumble. The selfish operator rarely imposed on her neighbor. We were one happy family. I pass my fingers mechanically up and down the monitor buttons to each operator's position. My finger is arrested on her position by hearing a full, rich, manly voice saying: "Won't you tell me your name? You have been so courteous and attentive to my wants this last year that I want to make you a present."

"I'll give you chief operator," she replies, and connects him to my desk. I notice that her face is flushed and that she is smiling happily. I inform him that we do not give our operators' names, but I will give him her number. It is Number 13. "Thank you," he replies. "I do not know when I have been so attracted by a voice. It is beautiful; so full of cheer and love of life, and seemingly so glad to be useful. I always take my receiver down the first thing in the morning, when I come to my office, and ask her the time of the day. It is a good beginning of a day for a busy man. A harsh, discordant voice would set my nerves tingling."

Again the picture shifts. In the doorway I see standing a tall, courtly-looking gentleman, with the gravest face, which, while speaking, lights up with a smile that makes it noble-looking. He is introduced to me as Mr. Kincaid, a prominent man of our city. In the course of conversation, he says to me: "I have just been telling Mr. Tracy, your manager, that I never had a number 13 in my life that was lucky, but the number 13 who has started my days right for a year, with her beautiful voice, has brought me good luck. I am anxious to meet her. Will you show we where my signal comes in?"

She is sitting with her hands folded, with that same contented, happy look. As we come to her side and I speak to her she looks up with a sweet smile into my face. She cannot help smiling any more than the sun can help shining. She points out his signal and I see a flush

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stealing over her face. She does not look up again, but watches her board with the closest attention.

She is gone from among us now, but her influence over us is just as strong as ever. She has not forgotten us, either. Every birthday is marked by some beautiful remembrance from her. Mr. Kincaid was not long content to hear her voice only. They were married six months later. Her husband said one evening, as a party of us were leaving after spending a delightful time with them: "Girls, let the sunshine in your hearts come out in your voices and light up some poor man's life as Ray has mine."

Manager's Duty to the Public and Himself

By Dr. Wm. Doan

(Paper Read Before the Canadian Independent Telephone Association at Toronto.)

When I was asked, as a representative of the operating telephone companies, to read a paper before this Association I felt much as the Irishman did when being ridden out of town on a rail. "B'yes," he said, "d'ye know if 'twasn't for the honor of the thing I'd just as leave walk." But it is an honor to appear before this Association in any representative capacity, at its first annual meeting. I am sure we all recognize the increased activity and anxiety of the Bell Co. since the exposures brought out by the Select Committee on Telephone Systems during the inquiry of 1905, and the publicity given to the fact of the existence of so many Independent systems in Canada. The Bell Company of late has been rubbing its eyes and wondering what's the matter.

DR. WM. DOAN,
President Harrietsville, (Ont.) Telephone Association.

The other day a cyclone in the southern states struck a farmhouse, tore it to pieces in an instant, and the next moment the proprietor found himself clinging to a rafter in the middle of the Mississippi. As he dragged himself upon the timber he remarked: "Well, I vum, that was so danged sudden it's ridiculous." We can well imagine that the frame of mind of the Bell Company must be quite similar to this, as it realizes that the Independents are making such marked progress throughout our fair Dominion. But the Bell Company is by no means dead, and we all acknowledge that it will take the best there is in us to gain and maintain the supremacy in our land.

The Bell people find themselves somewhat like the hod carrier who had overslept, hurriedly put on his overalls wrong side before, and as he climbed up the ladder his foot slipped and he fell to the ground senseless. As his fellow workmen gathered about him, one felt his pulse, and another asked: "Is he dead, Mike?" "No," said Mike, as he examined his curious appearance. "No he's not dead, but he's had a dom bad twist." Now that is about the best we can say for the Bell in my section. It's not dead, but it has "had a dom bad twist."

"I believe in a man who believes in what he believes in; and a man who don't believe in anything—I don't believe in."

Men of positive temperament inspire confidence, encourage co-operation and create enthusiasm. Confidence is for business what faith is for religion. Confidence may be temporarily aroused by the preponderance of a great personality, but it can only be sustained when it has wisdom, prudence and right purposes for its support. The twin sister of confidence is courage; but the enemy of both is doubt and cowardice, and the opponents of Independent telephony are compassing not land and sea alone, but the newspaper world also to make proselytes by appealing with keenest subtlety to men's doubts and fears as to the ultimate success of the Independent movement. All bad news travel fast, but bad news about Independent telephone companies is speeded on its way by the news bureau of our opponents. Good news needs to be pushed along. It has been well said that the man who refuses to toot his own horn does not deserve to succeed. Why not start a publicity department in connection with this Association?

We are living in a great age, the greatest the sun has ever illuminated. Men to-day tackle problems the like of which the world has never known, and do it with a smile, and the word failure seems to have slipped into the far-off yesterday. The demands and necessities of the day are the inventions and successes of to-morrow. In this class stands the telephone. The development and advancement in the Independent telephone business during the past few years has been truly phenomenal. I question if its equal has ever been seen in any other branch of commercial business. The unprecedented growth and continued increase is very largely due to the fact that the Independent telephone managers throughout the land have given the farmer and farm lines the attention they so long deserved. The policy of our friends (the Bell people) has always been to ignore entirely the farming interests, or give them a very indifferent service at such exorbitant rates that but few could afford the luxury of a telephone service. Through the effort, energy and enterprise of the Independent telephone companies of this country it has been made possible for those of our rural friends who would improve the

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opportunity, to become subscribers to a telephone exchange.

The Bell until recently (I am now speaking of my own locality) absolutely refused to give them any consideration whatever. Some people who think they are in the telephone business also think that the real telephone patronage begins in cities of six, eight, ten or one hundred thousand inhabitants, and that all below that are hayseeds. But when it is too late they awaken to the fact that they can only get away from the soil by moving over to the next world, and there does not seem to be very great inducements for the high and haughty-spirited telephone man to go there either. In so far as the Independent telephone movement has gone in its undreamed-of growth, it has won its way by taking the attitude of a servant. Just so long as we willingly serve our patrons, and serve them better than our opponents, just so long and no longer will we continue in our march of uninterrupted prosperity.

The great benefits that have been derived by the rural subscriber can scarcely be calculated. Living miles from a village, from his doctor, his relatives, his friends, often a mile from his nearest neighbor, in lonesome and isolated homes, the telephone has placed him in direct communication with his dealer, doctor, neighbor, relatives and friends, and made his isolated home bright and cheerful. Everything that grows must have the soil for nourishment, and the roots of the telephone system that is to live in agricultural Canada must be fastened to the homes of the farmer. Let us never make the mistake that our opponents made when they ignored the importance to them of the several million of farm homes, by which mistake they cut themselves loose from the earth and now find themselves up in the air.

It is not necessary to say that in common with all the Independent workers I not only have no quarrel with the men enlisted against us, but that on the contrary I have the highest regard for all, and the best of friendship for many of those with whom I am acquainted. We hold ourselves above petty personalities, but it is war and not competition that we are engaged in, and we can only regret that so many good fellows are on the other side in this fight.

The Bell people, I am aware, are approaching some of our local Independent enterprises in regard to having them make connections with their long distance lines. Let me take this opportunity to warn you against making any connection whatever with it. Your represent, as I believe, thoroughly Independent companies which are fairly prosperous. Why were you organized? Was it not to provide for the people of your various localities good telephone service at reasonable rates, which the Bell did not give you, and to develop territory which it absolutely refused to touch? How many of your subscribers would be enjoying the benefits of telephone service to-day if the Bell had retained control of the field and been able to keep Independent companies from doing business? I venture to say not one out of fifteen. What have you to gain by connecting with the Bell now? You have built up your properties not only without its help, but in spite of its opposition. Now, when all its efforts to drive you from the field have proven fruitless, it is not only willing but anxious to make contracts with you, probably on almost any terms you may care to name. It is for your own good that it is willing to do this? Will it protect your interests in any contracts it should make with you? Don't you believe it. It wants the business which you control and which it can get in no other way. Remember, too, that this is business that it never would have developed itself.

How did the Bell act when it had the field to itself? Its history shows that it gave any sort of service that suited it and developed only portions of the country, where it could reap enormous profits. When the Independents entered the field it resorted to everything possible to crush them or drive them out. In spite of this the Independents are growing stronger every day, for the people are with the Independents, and if the Independents wish to retain the support of the people they must remain Independent not only in name but in fact. You cannot be an Independent company and connect in any way with the Bell. You cannot serve two masters. You must choose between the people and a greedy corporation. The Bell is controlled by men who have no interest in any of the plants they operate beyond the profit they can squeeze therefrom. They will not develop new territory unless enormous profits will be the result. The prosperity of any locality means nothing to them except that it might be possible for them to force still greater returns from it.

On the other hand, the Independent companies are local undertakings in the real sense of the word. Local people are interested in the local plant, hold its securities and control its destinies. These people are not only interested in seeing it prosper as a telephone company, but also in making it contribute to the general prosperity of the community by furnishing good service at reasonable rates and developing new territory as needed. The Bell has no interest in the Independent companies except to get them out of business. Wherever rural lines have been extended we find that the price of farm lands has increased, and to-day one of the surest methods of gauging the prosperity of an agricultural community is to ascertain the number of telephones therein used. It is generally conceded that the more telephones there are in a country township the fewer will be the investments in "gold bricks."

The Independent movement cannot be stopped because it is the movement of the people against monopoly, and I find the Independent ventures all over the country, with few exceptions, standing loyally by their associates. We have made marked progress during the past year, but any one who has given this matter thought will admit that we lack thorough organization and co-operation. It ought not to be necessary for anyone to come before this Association and plead for greater loyalty to its principles. It ought not to be necessary, but unfortunately it is necessary. With so many telephone companies unrepresented here to-day, with so little co-operation among those that are represented, and less among those that are not, with the increasing demand all over the Dominion for telephones and the increasing necessity for capital to supply this demand, we ought not to be obliged to come here and take time to discuss loyalty to the principles of the Association. We are each looking after our own individual development without proper central or district organization. Until our organization is so perfected we can well be likened to a mob. Shrewd, discerning, powerful, strong and energetic, but yet a mob. We must have co-operation and arbitration or partial failure. We might just as well face this fact.

It will not be very long as the years go by until any man of sufficient vitality to prevent decomposition can sit in his house or office and get himself into conversation with any other man similarly placed in the province of

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Ontario, and not be very many minutes about it either. Any little seven by nine policy will not do. We cannot play the dog in the manger policy. That has been tried and proven a failure, else we wouldn't be in existence to-day. We need a campaign of education. We must work together in assisting each other in getting into forbidden ground. To get results, the telephone men must not only be members of associations, but must realize the results to be gained by co-operation. This kind of work will cost some money, but the end will justify the means. We cannot get something for nothing. If we can by the expenditure of a little money bring about a great, strong machine, in which each will have a place and yet friction be reduced to a minimum, we will have the best possible assurance as to the stability of our properties, the best guarantee that no broken cog will stop the entire machine.

In conclusion, I would say that when attending these conventions you see a man with a telephone face, don't wait for an introduction, but step up and tell him your troubles. If you have time listen to his. If he hasn't any he's bogus; he's not in the telephone business.

Talks and Queries

In the February edition of SOUND WAVES there will appear a second installment of the series of articles on selective party line systems by Mr. Einar Brofos. This second installment has been very carefully prepared and treats on the operation of impedance or retardation coils, showing the difference between plain resistance coils and coils possessing impedance.

After covering this point thoroughly, the effects of placing currents of different electrical characters in circuit with an impedance coil are considered. The first installment of this article therefore gives us currents of different electrical character. The second installment will cover the impedance coil and give a clear understanding of the effects observed while combining the impedance coil and the different currents.

Mr. Chas. A. Coar's article on "Telephone Traffic" will be concluded in the February edition of SOUND WAVES. The second installment of Mr. Coar's article will contain interesting data, including reproductions of recording ammeter charts and a circuit diagram showing the general application of electrical methods for recording telephone connections.

Everyone who reads the first installment which appears in this issue will not fail to study the final installment of the article.

EDITOR SOUND WAVES: We have a metallic iron wire line six miles long, with twelve subscribers on same. Five out of the twelve 'phones do not work very well. The bells ring all right by any other person ringing them in the line, but the operator at the board can not ring them. The five 'phones are scattered all along the line. What is wrong and how can I find out?

We have a pole changer, known as the Warner, at our board. When we listen in on the line or are waiting for an answer from central we can plainly hear the pole changer running. Please explain why we hear the noise. Pole changer is about fifteen feet away from the board and in another room.

We have a line with twelve bridging telephones on the line. The line is about five miles long. Any person on the line can ring this certain 'phone and give his ring all right, but when central rings the subscriber the bells do not ring very good and the ring comes all cut to pieces so that the subscriber can not tell whose ring it is.

We have a telephone manager in Huntington county who had trouble with one of the 'phones, the bells would not ring very well. He went to fix the thing and looked all over it and could not see any thing wrong; he told the party at the house that he had just made up new gravity batteries at the switchboard, and as soon as the blue vitriol dissolved the bells would ring all right.

1. The fact that you are able to ring all of the bells along the line from any of the telephones indicates very definitely that the trouble is not due to any defect in the telephone. The difficulty must be found at the central office. It is suggested as a first experiment, that you discover whether there is a buzzer in your ringing circuit. That is, when you place a plug into a line and drive your generator for operating the subscriber's signal bell, a rattling sound—if heard—indicates that a buzzer is in the ringing circuit. Locate the buzzer and connect a wire across the buzzer terminals so as to completely cut out the wire wound on the coils. Now make your test, and if you are able to ring the bells properly, the remedy of course lies in writing to the manufacturers of the switchboard and asking them to supply you with low resistance buzzer coils. Probably with each coil wound to 40 ohms and connected in parallel, this would give you only 20 ohms in the ringing circuit, and undoubtedly overcome your difficulty. On the other hand, if short-circuiting the buzzer will not overcome your trouble, the trouble must be due to a defective generator. We take it for granted that the generator which you have is of the alternating current type and not of the pulsating type. If you use a pole changer, it may be that one of the springs has become welded fast in such a manner that you are only projecting pulsating current while ringing out over the line. This, of course, will not ring the alternating current bells. More details regarding the ringing current available at the switchboard will be required before more specific instructions can be given for clearing the difficulty.

2. The noise from your pole changer may be caused through your having too many batteries connected to the machine, or in your not having a condenser connected across the ringing terminals. Either of the above faults may be the prime cause of your difficulty.

As a secondary cause, it may be suggested that your generator wires are probably laced together with the wires of your key cables or possibly with the wires of your switchboard to the protector rack and cross connecting board. Run your generator wires direct from the generator to the ringing springs on the keys and disconnect the old generator wires and you undoubtedly will find that your trouble is cleared, provided, of course, that you have taken care to reduce the excessive number of batteries and install the condenser across the ringing circuit.

3. The effects of which you complain—that the ringing current does not come over the line in a satisfactorily constant manner—may be due to a lack of adjustment in the pole changer. It also may be due to the platinum point of your pole changer having been completely burned away. The remedy is—new springs. This trouble also is one which may be caused by lightning arrestors not

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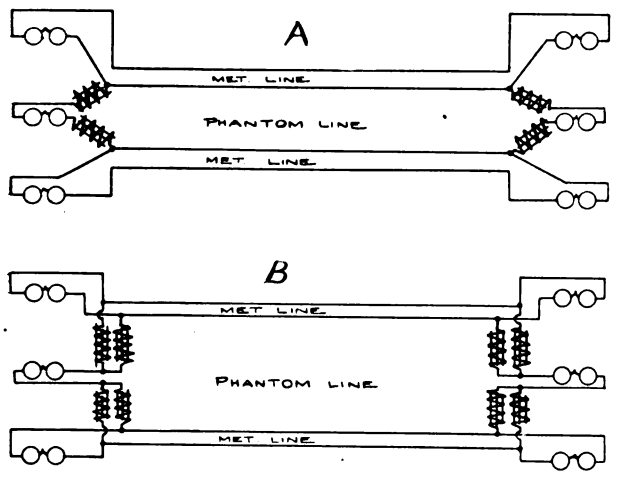
having been kept perfectly clean. The ringing current if of too high voltage will arc over the carbon, and while so arcing the bells will not ring properly. The remedy of course is to see that all of your carbon blocks are kept clean, removing all dirt from between them, and also seeing that your pole changer springs are in proper adjustment and in good condition.

4. Your explanation of the difficulty indicates that you are using an equipment of gravity batteries for signaling the telephones connected to your line. If this is a correct assumption, the difficulty will be cleared as soon as the gravity batteries get into good shape for work.

It may be suggested that gravity batteries may be maintained in satisfactory operating condition without throwing away the solution every time new blue vitriol must be added. Simply add the blue stone so as to keep the blue solution line midway between the zinc and copper. Sometimes it becomes necessary to remove some of the solution from the top of the battery, replacing it with water. However, as soon as the batteries get back into good shape, the bells will undoubtedly ring properly.

EDITOR SOUND WAVES: In the phantom line which I have read so much about in your magazine, I want you to give me full particulars. I tried this on a metallic circuit and hooked them up the same as cut inclosed, and used switchboard drop as the coils of 500 ohms each. It would not work at all, and there was induction from the other lines. I want to know if this was ever a success or if it worked and was anywhere near as good a line as the direct metallic line?

As shown by diagram, you have connected your phantom circuit to one wire of each of the two separate metallic circuits. Naturally there is nothing whatever to prevent cross talk from the phantom circuit to the metallic circuit, nor is there anything which will prevent cross talk between the two metallic circuits while



the phantom circuit is cut in. Your sketch is marked A. Now refer to sketch B. You will find that the phantom circuit is connected to the 2 metallic circuits through an impedance coil which equally distributes the current from the phantom circuit over the 2 wires of each of the metallic circuits.

The only way in which you can keep a metallic circuit clear from cross talk from the phantom will be to equally divide the phantom current over the two wires of each metallic circuit. This, it will be observed, is accomplished by the use of specially wound impedance coils. We should advise that you communicate with our advertisers of telephone apparatus who will be in a position to supply the apparatus you need for giving a satisfactory service.

EDITOR SOUND WAVES:—We have two telephones which have just been received from the manufacturers and we experience the same trouble with both instruments. When an operator plugs in on a line a disagreeable click is heard by the subscriber. We find that by changing about the conductors extending from the desk set to the connecting block, the click is overcome but the conversation is not so clear. These instruments are connected on different lines and on grounded circuits, both connecting to the central office, and the instruments are of the manual call type. That is, we must turn the crank of the generator and throw the drop in the switchboard. Can you tell us what the trouble may be?

Your statement that the instruments are of the local battery or manual call type indicates that there is some mistake in the method of connecting up the desk set conductors to the terminal block, or that you have not connected the correct terminal to the line and the battery wires. We should suggest that you carefully examine the terminal block to which the desk set, the line terminals and battery connections are supposed to connect. You will find the block marked either with the color combination of the insulation on the wires and in an abbreviated form the terminals to which the line wire and battery connections should be found marked. At any rate, the fact that you obtain a click when the operator plugs in on a line, indicates that your battery at the telephone is flowing through the receiver.

We should further suggest that you disconnect the battery altogether from the telephone; also disconnect the line wires and take the wires off from the terminal block. Now take one of the wires which goes to the desk set—there probably are four wires—and carefully test out which wires go to the receiver and which go to the transmitter. This you can do, of course, with a buzzer. After you have traced out the connection, reconnect your battery to the terminals so that battery current will flow through the transmitters and primary of the induction coil, and that while this battery is flowing you do not obtain a click in the receiver while opening and closing a receiver circuit.

In case these suggestions do not clear your difficulty, be sure to state in general the type of telephone with which you have trouble, stating whether the induction coil is in the base of the telephone or whether it is mounted separately, as you failed to give this information.

EDITOR SOUND WAVES:—We are having trouble with one section of our switchboards. Can you tell us how to clear the difficulty? We are using two positions of switchboards. While ringing out on the first board, the buzzer in the generator circuit responds on any line that we may ring out upon. Now when connecting to a line on the second position, we find that it is impossible to signal any subscriber on this board. We also find it is impossible to connect together any subscribers on the first board with any subscriber on the second, and in order to give service, we found it necessary to install repeating coils in some of the cord circuits and in this manner permit of giving service, though it is of an unsatisfactory character, for we have no repeating coils in some of the cord circuits and it therefore becomes necessary to change from one cord to another when making a connection between the two boards.

Do you think it best to install repeating coils in every cord circuit, or will it be possible to overcome this trouble?

The difficulty of which you complain is one which we already have referred to in an article appearing in SOUND WAVES some months ago. Your trouble is due to your not having connected together the same side of the line circuits in the two boards. Examine the line con-

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nections of the first board, and if your ground connection has been placed on the sleeve side of the spring jack, you will be pretty sure to find the tip side of the line circuit grounded on the second board. Now when you remember that the cord circuits of each pair are connected together from tip to tip and from sleeve to sleeve, note that when you place an answering plug into, say, line No. 1 on the first board, it is the sleeve side of this answering cord and plug circuit which is connected to the ground wire. The tip side connects to the line. Now take the companion plug, i. e., the calling plug of the same pair and put it into line No. 120, or any other line on the second position of the switchboards. Does it not appear perfectly clear that the sleeve side of the cord circuit is connected to the line wire and the top side to the ground? Now remember that the tip of the answering cord connects to the line in board No. 1, and notice the effect by connecting the tip of the calling cord to the ground. How can the subscribers talk under such conditions? The subscriber connected to the first board simply "talks into the ground," so to speak, by way of the spring jack in the second board; while the subscriber connected on the second switchboard "talks into the ground" through the spring jack on the first board. That is the reason there is no connection between the two subscribers and that you cannot obtain any service between the two boards without inserting repeating coils.

The remedy, of course, consists in simply connecting the ground wire of your two switchboards to the same side of the spring jack. The sleeve side being the one usually selected.

EDITOR SOUND WAVES:—We have a number of telephones which do not operate satisfactorily. They are of the local battery or manual call type. At first, these instruments appear to be operating satisfactorily, but after a short period of time they commence to gradually get weaker. Of course, this would look as though the batteries were not in good condition. Upon installing new batteries the instrument does not appear to come up. What may the trouble be?

From the nature of your description it appears that the trouble is due either to the gradual packing of the transmitter or to a short circuiting of the induction coil windings. Sometimes induction coils will gradually short circuit in this way, causing the trouble complained of. It is more probable, however, that the difficulty is due to a defective transmitter, and the best way to settle this point seems to consist in replacing the transmitter with an instrument known to be in good condition, and thus positively checking the exact location of the trouble.

Do Vibrations Render Poles Weak?

The Forest Service of the United States Department of Agriculture has recently conducted some valuable tests on the effect of duration of stress on the strength and stiffness of wood, the results of which are embodied in Trade Bulletin 10.

It has been established that a wooden beam which for a short period will sustain safely a certain load will break eventually if the load remains. For instance, wooden beams have been known to break after fifteen months under a constant load of but 60 per cent. of that required to break them in an ordinary short test. There is but little definite and systematic knowledge of the influence of the time element on the behavior of wood under stress.

This relation of the duration of stress to the strength and stiffness of wood is now being studied by the Forest Service at its timber-testing stations at Yale and Purdue universities. The investigation should determine: The effect of a constant load on strength; the effect of impact load or sudden shock; the effect of different speeds of the testing machine used in the ordinary tests of timber under gradually increasing load; and the effect of long-continued vibration.

To determine the effect of constant load on the strength of wood a special apparatus has been devised by which tests on a series of five beams may be carried on simultaneously.

The experiments of the Forest Service show that the effects of impact and gradually applied loads are different, provided that the stress applied by either method is within the elastic limit of the piece under test. For example, a stick will bend twice as far without showing loss of elasticity under impact, or when the load is applied by a blow, as it will under the gradually increasing pressure ordinarily used in testing. These experiments are being extended to determine the general relations between strength under impact and gradual loads.

Bending and compression tests to determine the effect of the speed of application of load on the strength and stiffness of wood have already been made at the Yale laboratory. The bending tests were made at speeds of deflection varying from 2.3 inches per minute to 0.0045, and required from twenty seconds to six hours for each test. The woods used were long leaf pine, red spruce and chestnut, both soaked and kiln-dried. From the results are obtained comparable records for difference in speeds in application of load. A multiplication of the results of any test at any speed by the proper reduction factor, derived from these experiments, will give equivalent values at standard speed. The tests also show concretely the variation of strength due to variations of speed liable to occur during the test itself. The results plotted on cross-section paper give a remarkably even curve as an expression of the relation of strength to speed of application of load, and show much greater strength at the higher speeds. A numerical expression of the law, averaging all species, both wet and kiln-dry, gives the following table which shows the increase in strength with the increase of speed of test:

Minutes to move cross-head one inch	Ratios of ultimate Compression	Strength Bending
900	100	100
350	100.8	100.9
150	102.3	107.3
40	106.9	110.1
5	113.8	118.7

The first column, which gives the number of minutes required to move the crosshead of the testing machine over the space of one inch, is the reciprocal of speed. The second and third columns give the effect of this increase of speed upon compression and bending, respectively, and show that strength increases with speed. The strength at the lowest speed is arbitrarily fixed at 100 as a convenient basis for comparison. The ordinary bending-test speed for small specimens is one-tenth inch per minute, or, reciprocally, 10 minutes are required to move the crosshead one inch.

It is a common belief among polemen that the continual vibrations to which telephone poles are subjected take the life out of the wood and render it brash and weak. Nothing is definitely known as to the truth or falsity of this idea. Tests will be undertaken to determine the effect of constant vibration of the strength of wood.

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Telephone Operating Methods

By A. J. ULRICH

(Address Delivered Before Pennsylvania Independent Convention at Allentown, Pennsylvania)

In speaking of operating methods, it might be of interest to compare present methods in use on central energy boards, or, as they are perhaps better known, common battery boards, with the methods that were used on Law boards, which most of the larger companies were operating prior to the adoption of the central energy system.

The Law system had a number of advantages. The arrangement of call circuits was such that the work could be distributed to a large number of operators, or condensed so that a few operators could handle it. This made it possible to handle the work with comparatively few operators at night, Sundays and holidays, when the traffic was light. It was an easy matter to train students how to operate, for the average student could hold a light position after having listened in one some regular operator for a few days. With this system a rapid service could be given, as the subscriber could place call instantly by pushing in a button, giving his number and number he wanted, which the operator would acknowledge having understood by giving a single stroke of his bell; this same method being used when subscriber called off, which he had to do in order to clear his and the called subscriber's line.

A. J. ULRICH,
Traffic Manager Keystone T. & T. Co.

An operator could, with this system, operate for hours without it being necessary for her a say a single word, as the use of phrases in the handling of calls was not thought of, for the reason that there was no necessity for them.

The disadvantages of operating this system, however, when compared with the present system, were many.

Subscribers would, in a great number of cases, fail to call off, and operators receiving a call for a subscriber who hadn't called off, whould have to call to operator handling this subscriber's originating calls, to disconnect him. If a call circuit got out of order it would affect the service of every subscriber using this call circuit when placing a call. It frequently happened that a number of subscribers would call almost simultaneously, and the operator, not being able to understand, on account of confusion of numbers, would get calls mixed up; as a consequence, subscribers would have to call again and in a good many cases would yell out number wanted, and keep on yelling louder and louder, and by so doing drown out half a doozen or more others who were trying to place calls, every one yelling to everybody else on the circuit to "shut up," and the like. This condition of affairs ended in such a rush of calls that the operator holding the circuit became so "rattled" that she had to be replaced by another operator for the time being.

Supervision of the work was only possible by listening in on the operator's position at the board, for this was the only way of knowing how quickly and carefully an operator handled the work as there were no lamp signals to judge by, such as is the case at present.

Notwithstanding the good features of this system, the disadvantages were of such a nature that those who had the matter in hand deemed it advisable to try and perfect a system whereby these disadvantages could be overcome, and the central energy system was the result of their efforts.

The adoption of the new system revolutionized operating methods, and of a necessity so. It was soon found, in order to get best results, a uniform way of handling calls was necessary, and in order to bring this about at the earliest moment a school for students was inaugurated, where the students learned to use the proper phrases, object of supervision, markings on the board, and the like.

The best method of conducting a school for operators can only be decided by the results obtained, and as this branch of the work is practically still in the experimental stage it is a difficult matter, at present, to lay down any hard and fast rules.

Some traffic men are of the opinion that the more a student is taught about the mechanical features of the board the better operator she will make, and have charts and diagrams in the schoolroom showing circuits, relays, etc. Whereas it is possible that there may be something in this claim, personally I don't think it is necessary for an operator to know the mechanical end of it at all, for I believe that those in charge of the operating branch of the work will agree with me that the best operators they know of have very little knowledge of circuits and the mechanical parts of a switchboard.

We think it best to have all applicants fill out an application blank in person, giving name, address, age, former employment and the names of at least two references; if former employment was with some telephone company; length of time employed; whether she worked on local or long distance boards, and the reason for her leaving. The applicant is advised that for the first week or ten days she will not get any pay, but if satisfactory progress is made by her at the end of that time she will be placed on the students' pay roll until such time as she

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is assigned to an exchange, whereupon she is transferred to the regular operators' pay roll of that exchange. Applicants are examined as to height, reach and eyesight, a regular optician's eyesight test chart being used for the eyesight test. Applicants must be 5 feet 4 inches in height, must have a reach of 29 inches, and be able to pass eyesight test. If she doesn't meet these requirements at the time application is filed she is so advised; but if she does she is advised that we will notify her when to report. In the meantime, the parties she has given as references are written to, and if satisfactory replies are received, the application is filed until such time as a new class is formed, when applicants who have passed examinations, and whose references are satisfactory, are notified to report to the school for instructions. If an unsatisfactory reply is received from those she has referred to, the applicant is rejected, application blank marked accordingly and filed for future reference, in case the applicant should apply for a position later on.

The school is in charge of an instructress who does nothing else but teach students. We have a separate room with two sections of multiple boards so arranged that the students can answer and complete connections. The course of instruction is about as follows: Students are first taught the location of the various groups of hundreds in the section, and then the individual numbers in these various groups. Explanation of what is meant by sections, panels, positions, answering jacks, trunk jacks, multiple jacks, and why they are termed such, answering keys, ringing keys, answering and connection cords, and the proper use of same, and the object of pilot lamps. It is then explained and shown how the subscriber calls the exchange, and what phrases are used in handling calls; how and why a "busy" test is made; how long to ring if line tests clear; how to handle call if number in some other exchange is wanted; proper use of call wires; that numbers called for must be repeated back to the subscribers by spelling figures, and with a rising inflection as though asking a question, and not to repeat and instantly cut out, but to wait a moment so as to give subscriber a chance to correct her if she repeated back the wrong number; the meaning of markings on the board, and the different colored lamps are then explained; what is meant by flat, measured and pay station service; are tested for speed in picking out correct numbers in the multiple; are advised as to the rules governing operators while in the operating and retiring rooms. Students are then examined in all of the foregoing instructions and, if satisfactory, are then assigned to the various exchanges, and placed on some of the lighter positions. If a student hasn't progressed enough at the end of a week's instruction to indicate she has the qualifications essential towards the making of an operator, she is dismissed from the school.

When a student is placed at an exchange, a card and folder are made out, which card shows on one side her employment number, exchange assigned to, and an operating number, which she is advised of, and which she is instructed to give instead of her name when asked for over the wire, either by subscribers or service inspectors; name, address, by whom recommended, former employment, age, height, sight, reach, date employed, and at what rate; has spaces left blank on which are marked dates when salary was increased, what her present position is, when transferred from one exchange to another, on what date she was promoted (if such should be the case), date of dismissal, date of resignation, and cause of such dismissal or resignation. On the back of the card are marked date and number of times operator was absent or tardy while in our employ. Folder and card are sent to the district manager, who keeps this record while operator is employed in any of his exchanges, and upon operator being dismissed or resigning notes date of dismissal or resignation, cause of same, and sends folder back to the traffic manager's office to be filed.

In addition to card, a deportment blank is also enclosed in the folder, on which is kept a record of the number of times the operator had to be reprimanded in regard to her work, attendance or deportment. These records are referred to by the district managers when the question of increasing operators' salaries comes up, and we believe that by this method of keeping operators' records we are in the best position to know what operators are deserving of increases, and those that are not.

As various branches of the work are embodied under the heading of traffic work, we have a head for the various branches, and our organization for the department is as follows:

The Operating Department,
Service Inspection Bureau,
School for Operators, and
Clerical Department.

The operating branch is divided up into districts, and comes under the direct supervision of a district manager. The district manager's duties are to see that there is a sufficient number of operators in his exchanges to handle the work; to see that all instructions sent out from the traffic manager are complied with; to follow up complaints; to ascertain whether they are due to operating or other sources; to see that the work on the board is evenly divided; to have at least 50 supervision tests made monthly on every operator in their exchanges. These supervision tests are made by whoever the district manager appoints for this work, one time it will be a chief operator, another time a supervisor, and so on. Whoever does the supervising notes down on a form, which is gotten up for this purpose, the number called, and any irregularities, such as: "Operator asked for number more than once," (whether it was the fault of operator or subscriber); "Did not use rising inflection;" "Did not repeat number;" "Connected with wrong number;" "Failed to make proper 'busy' tests;" "Connected over the 'busy';" "Premature disconnects;" "Poor supervision," etc. The results of these supervision tests are then turned over to the district manager, after which they are filed in the manager fully advised as to the need of more trunking facilities, not only with the various exchanges, but also with the private branch exchanges in his district, so that the private branch subscriber can be seen and advised as to the amount of traffic handled on his private branch trunk, with the object in view of possibly getting the subscriber to have additional trunks placed, which would be the means of giving not only the subscriber, but those who do business with him, a better service. The district managers are expected to be thoroughly in touch with the work in their districts at all times, so that any changes which, in their opinion, would tend to improve the service, can be submitted at the monthly meetings, where the matter is gone over thoroughly and, if feasible, improved.

The district managers are required to hold at least

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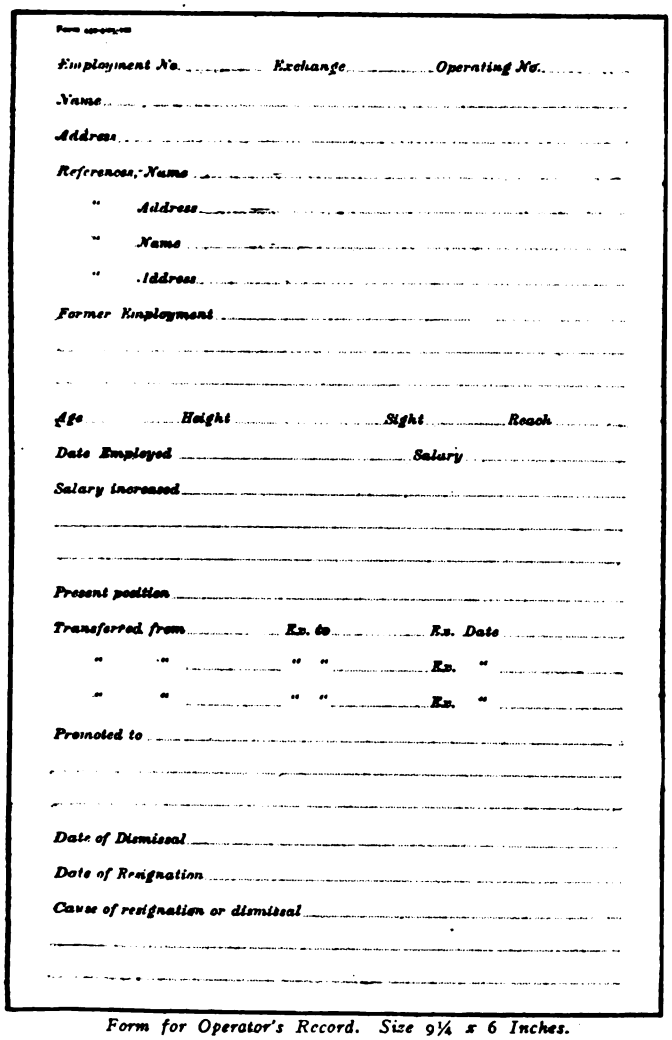
one meeting a month (or more, if necessary) with their chief operators and supervisors, and take up the work in detail, the results of service tests in their districts, and, in short, anything else concerning the service that they deem advisable.

The service inspection bureau is in charge of a chief service inspector whose duties are to arrange schedules for the day, evening and Sunday tests in the various districts, and arrange a subscribers' list in these districts in order to aid the service inspectors when making tests. These service tests are noted on little blanks in pad form by the service inspectors, while making the test; then when tests are completed and inspectors return to the office they fill in a regular form provided for this purpose, showing the time and what subscribers' phones the ests were made from, time it took the operator to answer, both on originating calls and re-calls, and note in the "re-


Employment No. ..... Exchange ..... Operating No. .....
Name .....
Address .....
References, Name .....
" Address .....
" Name .....
" Address .....
Former Employment .....
Age ..... Height ..... Sight ..... Reach .....
Date Employed ..... Salary .....
Salary increased .....
Present position .....
Transferred from ..... Ex. to ..... Ex. Date .....
" " ..... " " ..... Ex. " .....
" " ..... " " ..... Ex. " .....
Promoted to .....
Date of Dismissal .....
Date of Resignation .....
Cause of resignation or dismissal .....

Form for Operator's Record. Size 9¼ x 6 Inches.

marks" column any irregularity, such as wrong phrases being used, failing to repeat numbers, poor supervision, and the like. In addition to noting this, they work out a per cent. of the number of calls answered in four seconds or better, also those that are answered in eight seconnds or better.

These tests are then entered on the monthly report record and turned over to the traffic manager, who marks criticism of the test, if any, on report, which is then sent out to the district manager in whose district the test was made. Results of these tests are then gone over by the district manager with the chief operators, supervisors and operators concerned, as they can tell from the report just what operators gave the long answers, for at the time the test is made, if a call is not answered until 10 seconds have elapsed, the inspector ascertains from the chief operator the number of the operator who handled this particular call, which is noted on the report, and serves as a means of identification when these reports are sent to the district manager for his explanation of any long answers or irregularities in the handling of the work in his district.

This department handles all complaints from the subscribers, relative to service. A record is kept of whether the complaint came in by letter or phone. When the general manager's department receives a letter of complaint, there is a series number stamped on the letter and it is charged up to this department, which acknowledges having received it by signing a slip having a corresponding number to that on letter of complaint. This complaint is then gone into, and if it is of such a nature that the trouble complained of might be due to maintenance, a slip is made out and sent to the maintenance department to have the line and instrument gone over. The original letter is sent to the district manager, who follows up the complaint and ascertains from the maintenance department whether any trouble was found, and, if so, marks same on his report, calls up the subscriber and explains cause of trouble. If the trouble is found to have been cause by poor operating, this is also noted, and the matter taken up with the operator handling this subscriber's calls, and the subscriber kept in touch with for a few days to see if there is any improvement in his service. At the time of receiving complaint, a record is also entered on a form, which shows what subscriber this complaint came from, nature of complaint, and also to whom the complaint was referred. When these reports come back from the district manager, if he is of the opinion that it would be advisable to have a special service inspector see the subscriber in person, the district manager so specifies on his report. This is generally found to be the case on two party trouble, and on such subscribers' lines where there are one or more extensions on the line. The special service inspector then makes it a point to explain cause of trouble to subscriber, as, for example, on two party compaints the trouble may be due to some one trying to use the line when the other party is using it, or how a "busy" report could be given on the "D" party's phone while "A" was using it, without "D" having used the phone for several hours, and the like. The special service inspector then turns in his report, which is entered on the monthly sheet, showing the handling of the complaint from the time it was received until it was cleared to the satisfaction of the subscriber. All service complaints on which investigations have been made and closed are then sent to the record department to be filed in the subscriber's individual folders, and in this way a complete record is kept from the time the subscriber's phone is installed.

In such cases of complaint where it is found a matter for the adjustment agents to take up, this is noted. The date on which it was referred to the adjustment department is recorded, and as far as this department is concerned the case is closed. By this method we can, at the end of the month, give a history of every complaint, the number of complaints, whether received by letter or phone, what department they were referred to, and what department was at fault, whether operating, maintenance, distribution, cable, etc.

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A monthly report is also made up of the result of the service tests, the average being given on day, evening and Sunday tests, according to exchanges, and ranked according to merit, both as to originating calls and recalls. This enables us to see whether the answering of calls in any particular exchange is falling below the average, and if it is found that this is the case, the matter is taken up with the district manager concerned.

A monthly report of the number of complaints and the results of the service testing is made up from these records and forwarded to the general manager.

It is this department that has charge of interviewing and employing applicants for operating positions, also the compiling of all reports concerning the operating division.

The clerical department is in charge of a chief clerk. Here the directory is compiled and prepared for the printer. The assignment of subscribers' numbers (other than those of party lines) are made in the clerical department and noted on traffic plots, showing lines according to positions and class of service. The work of summarizing the monthly peg account, as sent in by the district managers, is also done in this department.

The reporting of trouble by the various exchanges is so arranged that, in addition to making out a regular maintenance trouble slip, it is also noted on a chief operator's trouble report, and any cases that are still out of order five hours after having been reported are specially noted. A report is phoned to the traffic manager's office every morning at 8:30, giving the number of employees absent, amount of trouble reported and not yet O. K., according to lines, instruments, switchboards and trunks per exchange; also the number of cases that are known as "left-over trouble" from the day previous. This report places the traffic manager in a position to ascertain the amount of trouble in any one exchange, and, if above normal, arrangements can then be made so that the service can be handled to the best advantage until the trouble is cleared.

It is essential, in order to give good service, that the various branches of the department work in harmony, and this can only be brought about by adopting and carrying out systematic methods.

I do not believe that there are any two Independent companies operating alike, as far as the traffic work is concerned, and this no doubt is due, in part, to local conditions that have to be considered. It is believed that a great move in the right direction will have been made when the Independent companies adopt a standard for their construction, switchboards, circuits and equipment, and this being true why should it not also be a step in the right direction to have a standard set of operating rules and regulations?

I was informed that at the national convention held in Chicago a committee having the matter of standard operating rules in hand and submitted a report covering this subject. Whether these operating rules are such that they can be applied to all companies, is a question that I am not in a position to answer. However, I sincerely believe that when such a set of rules is compiled and adopted by the various companies, the result will naturally be a general benefit to all patrons of the Independent telephone companies.

Business Results by Telephone

How little advertising is based on the telephone. The merchant prints his telephone number on each folder, or says "telephone orders given prompt attention." But very seldom does he send out advertising matter in which telephone orders are made the main issue.

Printers' Ink, that clever New York advertising paper, thinks that a barber in that city has the right idea. His shop is on Broadway, in the downtown business district, where men are in a hurry. He distributes blotters through office buildings in his territory, and about the only thing on the blotter is the suggestion "make appointment by telephone and so avoid waiting." Then follows the telephone number. This convenience requires no laudation, nor does the manner of exploiting it. They speak for themselves.

Hotels in the uptown Broadway district distribute every morning about ten o-clock a printed menu of the day's luncheon through surrounding office buildings. Business men see what's for lunch, and are doubtless often led to a particular hostelry by some special dish. But this advertising would be made much more effective if upon the menu were printed a prominent note to the effect that tables would be reserved by telephone. It might even be practicable with guests who are known to state that steaks, chops and other dishes requiring some time to prepare would be put on the fire at any desired time by telephone order, and served at the moment the guest is ready to come, thus saving what is to most people an unpleasant wait.

The grocer is a man who ought to profit by the consistent exploitation of this telephone idea. Telephones mean prosperous customers, living on a fairly liberal scale. The morning delivery service and house-to-house canvass for orders could be very materially accelerated by issuing a daily folder from which customers could order by telephone. A brief price list of vegetables, fruits and other green stuff would not be costly or inconvenient where a printing office is within reasonable distance, and the price list could be issued within two hours after the morning's stock was in, and distributed to householders in the grocer's territory. Or if this were not advisable, folders could be sent out emphasizing the fact that housekeepers have only to take down their telephone receivers any morning to learn what is in the market.

People need to be reminded that they have telephones, and shown how to use them in ordering. The telephone companies make good capital of folders that explain the uses of a telephone. Hundreds of persons would dash madly for the nearest fire-alarm box in emergency, never reflecting that the telephone is the quickest of all fire-alarms, did not the companies remind them of it in advertising. Every telephone order received puts the cost of selling on the customer, who pays for the message. What is needed is advertising matter that will make this telephone issue prominent. Readers should be impressed with the idea that the telephone is there in their own homes, and that messengers wait at the store to carry out any order they may send in. The druggist should educate his neighborhood to the speed, ease and advantages of the telephone in sending emergency calls for medicine. The physician would find this an unobjectionable form of advertising. The bank can get deposits by telephone, sending a messenger for them on request. The department store should make its daily bargains accessible by wire. Telephones are universal nowadays. They have a universal application to business. But the public is blind to many of their uses, and needs to be reminded by special telephone arguments.

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Standardization of Construction Methods

BY LLOYD E. KNAPP.

(Paper Read Before the New York State Independent Telephone Association at Niagara Falls, N. Y.)

It has been conceded that the central western states have always been in the lead and the question of adopting a standard as to construction methods is one with which the respective state associations have had to deal, and the subject has been brought up a number of times before the National convention. The National committee has made considerable headway along the lines of a report on the standardization of construction and apparatus, but as yet nothing has been officially adopted by any of the associations, and I think the New York State association should set an example to other associations and actually accomplish something along these lines:

To provide that the apparatus used and construction done in the Independent systems throughout the state be such as to give the most efficient service possible and, at the same time, materially enlarge the public appreciation of anti-monopoly conditions.

The subject of standardization is of such importance, and there is usually such divergence of opinion, that I feel I should approach it simply in the manner of making suggestions.

We all understand, of course, that the development of the Independent telephone field has been due in a large measure to persons desirous of throwing off the yoke of monopoly, which had proved so burdensome; whose intentions were of the very best, but who of necessity had no advance knowledge of telephone engineering. I do not intend to criticize the endeavors of those worthy men who have blazed the path in our unprecedented growth, but to call attention to a way in which the systems now operating may be benefited, particularly in long distance service. Incidentally I wish to point out to unscrupulous manufacturers, who have been supplying to the uninformed an inferior grade of equipment of a type ill-suited to their needs, the error of their ways and to show the harm they have been doing the Independent cause, which has created for them all of the business they have or may expect to secure.

In the matter of toll service the weakness of the Independents has not been in the territory they cover, for one is able ordinarily to talk as far as he requires; not in the rates, for they are liberal; not in the quickness of service, for which the customary Independent hustle, calls are sent through with all possible haste; but in the fact that one has often to go through several types of switchboards and various styles of line construction to reach the person with whom he desires to speak; and when the connection is secured the service is not as good as it should be because of line and switchboard resistances, leakage and various other causes

To illustrate, we will say that it is our desire to talk with our well-knwn and versatile friend, J. Doe, who at the present is residing in Ruralville. We remove our receiver here and talking over a good copper circuit, state our wants to Miss Toll Operator. She, in turn, calls Adjacent Town, over a copper circuit built along the most rigid lines of proper toll line construction.

Adjacent Town is a magneto system, entirely metallic, and "comes up" fine. Here we are plugged on to the line running to "Somewhere Else," which happens to be of the McClure or Common return type. Business is good in "Somewhere Else" and, as a result, the "Commons" are a trifle over-loaded and it is here we notice some cross-talk.

Notwithstanding the busy condition of affairs in "Somewhere Else" the operator is obliging and hastens to switch us on to the line for "Near-by-ville" where we strike a grounded bridging system, which, by itself, isn't so bad, but on a toll deal, well—.

When the drop falls in "Near-by-ville" the operator cheerfully plugs in and, ascertaining our desire, at once connects us with "Ruralville."

Now when the Ruralville system was started there was none too much money in the treasury, and economy of construction was the main consideration, so when "Mr. Sleek Salesman," representing the "Don't Care for Our Reputation Company," came along and showed them how they could build a series grounded system at about one-half the cost his competitor was advocating for a bridging metallic system they patted his back and gave him the order.

Therefore, we finally get our childhood chum on a grounded series line on which there are only six other instruments, and the conversation that ensues greatly resembles a combination between an ax on the grindstone and grandfather's coffee mill.

With us, who know these things, allowance is made, but with Mr. Businessman, who is laying down his good "hard-earned," excuses don't go. What he wants is talk—good plain talk. He wants to do it himself, too, and not through the medium of some operator, who obligingly offers to repeat for him. And, bear in mind, that one conversation of the nature outlined can do more toward killing your toll business than all of the low rates your monopolistic neighbor can offer in a year.

The primary consideration in exchange operation is service, for upon service does all else depends. Upon the service does the success or failure of the company rest. The subscription list varies according to the service given. Poor service, poor patronage, poor dividends, and vice versa. But the service does not depend entirely upon the equipment, but the manner in which this equipment is used. Poor equipment may be used so as to give reasonably good service and the very best of equipment, in the hands of the inexperienced or slothful, may in a short period run a company in such a condition that many liberal doses of Standardization will have to be administered before we again see in it the resemblance of a good healthy system.

The toll lines especially should be able to give the best service of any in the exchange, and in order that this may be so it is necessary that some standard of toll line construction be adopted and strictly adhered to.

In this connection I would say that the long distance companies, who are of a necessity giving their time entirely to the construction of toll lines, would be much better able to correctly care for the toll business than others, and I fail to see why it would not be more profitable for the local companies to allow the long distance companies to handle the building of all long distance lines and to provide for them accommodations on their

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switchboards. This would assure all toll lines being constructed in a uniform manner, thereby giving the best of service, and would further allow the use of the time and moneys spent in this direction for the extension and betterment of the local systems.

These long distance companies should adopt a standard set of specifications for their toll line work, and I am sure that the specifications, such as they would naturally adopt, would be an invaluable aid in the construction of local lines.

These specifications should cover right of way, route of toll lines, locating of poles, spacing of poles on straight lines, spacing of poles on curves and corners, long spans, spacing of road crossings, railroad right of way, height and diameter of poles, clearing of obstacles, railroad crosings, extension fixtures, spacing of cross-arms, cross-arm fitting, pins and fitting, distribution of poles, method of gaining poles, painting of poles, method of attaching lightning arresters on poles, method of attaching X arms, method of bracing X arms, stepping of poles, setting of poles, facing of X arms, reinforcing and guying poles, anchors and uses, size and kind of wire to be used, method of stringing wires, sag of wires, location of wires, method of tying wires, method of making joints, method of dead ending and method of transposing.

The specifications should also cover the method of a toll line entering an exchange so that the manner of answering toll calls and opening the line for test may be exactly the same at all exchanges.

Standard instructions should also be issued for the operators as to the proper handling of toll messages so that an operator accustomed to handling toll calls at any one board might be placed at any other exchange and know, without further instructions, that the manner of handling toll calls was exactly the same in each.

It would be well to have the operator become familiar with the parts of the switchboard, learning the names and functions of each, so that she might more intelligently perform her duties.

The instruction to operators should be general, but deal particularly in the handling of long distance business and should deal with the proper method of handling an originating message, taking care of delayed calls and explaining the delay to the calling subscriber, the transmission of messages in the event of subscribers not being able to talk with ease, the timing of toll messages, the supervision of toll connections, the handling of out-going calls, the handling of received calls, the handling of appointment calls, lost calls, reversed calls, the method of routing messages to the best advantage, day rates and night rates, the use of the repeating coil in connecting lines of dissimilar nature, the necessity of immediately reporting all trouble on toll lines, the proper clearance of circuits when messages are completed, on the passing of calls through an exchange, the method of handling calls from pay stations, the collection of messenger charges on appointment calls, the necessity of treating the public in a prompt and courteous manner and the necessity of a harmonious feeling between all toll operators.

Also it might be advisable to issue, in simple form, instruction as to the care, testing and repairs necessary on magneto systems for distribution among the new recruits to the great army of telephone workers.

Owing to the existing conditions it would not be feasible to adopt a standard as to the cable distribution, line routes or types of equipment in the larger exchanges in the cities, but a method of how the cable may be hung, how leads may be run, etc., can be fully taken care of in the manners before suggested.

For magneto exchanges suggestions might be made along the line of adoption of 4-bar 1,000 ohm instruments as a standard for local and lightly loaded lines, as they give the best service and are more readily interchangeable than any other. For heavily loaded rural lines, however, I would make exception and advise the use of 5-bar 1,600 ohm instruments, as actual practice has proven them best suited for that class of work. Whether they be wired with push buttons so as to ring central without signaling the other subscribers, and vice versa, I would leave a matter of choice with each individual manager. However, I do advocate the use of a low capacity condenser in the receiver circuit so as to assure positive ringing on the line in case a receiver is accidentally or otherwise left off the receiver hook.

The suggestions here offered are made not with the idea of forcing a radical change in the equipment of the companies now operating, but to have them so use the equipment they now have that it may give the greatest good to the greatest number. Not to use the cheapest or the most expensive equipment, but to use the best equipment in the manner best suited toward the perfection of Independent service, the satisfaction of Independent patrons and the advancement of the Independent telephone movement.

Personally, I wish to say that it always has been, and shall be, my aim not to sell everything possible to a company, but to supply it with equipment best suited to give perfect service under its existing conditions and the greatest returns for its expenditure.

I sincerely trust I may have the hearty co-operation of all others in the manufacturing field in educating toward a more perfect service the people to whom we look for our business.

However, as I stated before, it lies not alone with the manufacturers, nor with the individual operator or exchange manager, to accomplish this result, but it requires the concerted action of all the associations, and when we have adopted a standard form of toll line and exchange construction, a standard form of apparatus to be used and a standard method of handling long distance calls then will we have taken a much-needed advance step along the line of our future permanency and financial benefits.

Farmer Tried by Telephone

The following telephone conversation took place at Terrant, Wis., the day after the last general election:

"Hello, John. Say, I wish you would come down to my court today.'"

"What for?"

"The town marshal has sworn out a warrant against you for beating him up election day. I want to try you."

"Can't do it, Judge. I'm too busy."

"I'll have to send a constable after you."

"But I am busy husking corn and buildin' a fence around my east forty. Why don't you try me now?"

"All right. Are you guilty?"

"Yep."

"Five dollars."

"All right, Judge. I will send it down by the rural mail carrier. Good-by."

John Hendricks, a farmer living near Chippewa Falls, was the man tried. The justice of the peace received the $5 fine from a rural mail carrier the day the unique trial took place.

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Recent Telephone Patents

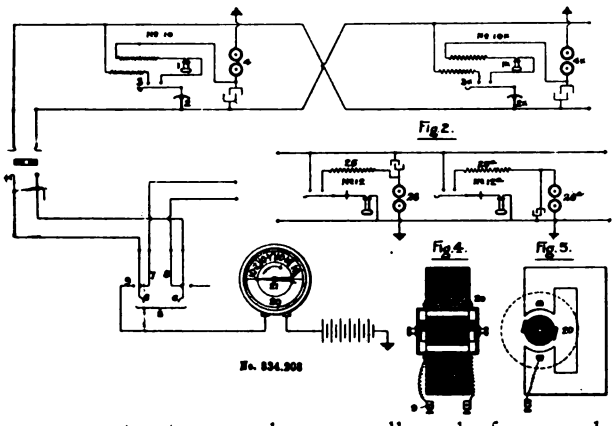
No. 832,876. Connector for Telephone and Other Wires.—Peirce.

This is an arrangement in which a piece of metal is bent into a U shape with a screw passing through the opening end of the bent side and so arranged that two wires may be inserted between the sides of the U shape metal and held in place by means of the screw and nuts, and thus permit of the wires being locked into position and held there as explained.

No. 834,208 Telephone System.—Kenney & Leather.

With 2 or more parties connected to a telephone line it is, as a rule, very difficult, if not impossible, for an operator to know whether it is, say, the X subscriber who is calling or whether it is the Y subscriber.

Under unlimited service conditions this fact does not effect the service in any respect, but when it is necessary



for an operator to record every call made from each of the stations of a certain line, we have introduced an element which calls for a question of veracity. Say, when the X subscriber makes a call, and upon the operator's request as to his number, gives the number of subscriber Y, naturally the operator must place the charge against Y subscriber's account, and in this manner much confusion is caused. In the present invention this chance for confusion is overcome by installing certain apparatus in the switchboard, which, when connected to the calling subscriber's line, automatically indicates which subscriber is speaking.

Say we have two subscribers connected to a line circuit, and they are provided with signal bells normally grounded through a condenser. One from the tip wire to earth and subscriber 2 from the sleeve wire to earth. Now, when, say, the subscriber 1 removes his receiver from the hook switch and the operator responds, it is only necessary to press the button or throw a lever of the key for permitting an indicator to record whether it is the No. 1 or the No. 2 subscriber calling, for the No. 1 subscriber's signal bell has a resistance of 1000 ohms and causes the indicator to revolve to a certain maximum point, while subscriber 2 has a signaling device wound to a resistance of 2000 ohms and therefore the station indicator will not revolve its needle quite so far as was the case in the instance of subscriber No. 1 Thus, briefly, it will be understood that if the indicator is of the ammeter, or, rather, milli-ammeter type, it is then posible to observe by the deflection which subscriber may have his receiver removed from the hook switch.

No. 834,764. Protective apparatus for railway telephone circuits.—Scribner.

When telephone instruments are operated in conjunction with electric railway equipments it is necessary to place the telephone wires on the same poles and cross arms together with the railway circuits. Under such conditions it frequently occurs that the telephone circuit becomes crossed with the railway supply wire, and therefore it is possible that serious injury may be done to any person who may attempt to telephone while the railway currents are crossed with the metallic portions of the telephone equipment.

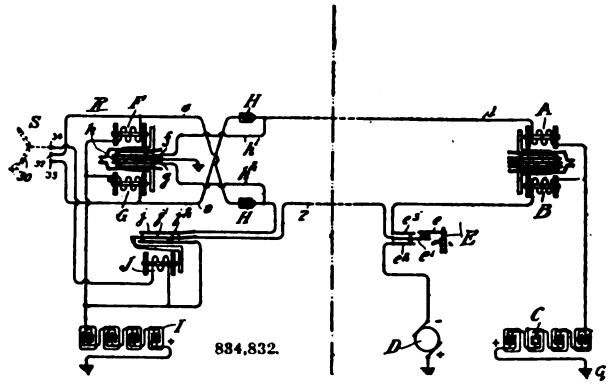
In the present instrument the liability for damage being done through this cause is reduced to a minimum by several methods.

In the first place, all parts of the telephone instrument liable to be handled by the users are left out of actual contact with the telephone line. This being accomplished by connecting the line wires to one winding of a repeating coil and connecting the telephone circuits to a remaining winding.

At the same time, the invention provides for automatically opening the telephone line connection and the local battery supply circuits whenever the door of the telephone housing is closed.

No. 834,832. Means for Charging Storage Batteries of Telephone Systems.—Martin.

This is a system of charging storage batteries operated in conjunction with automatic exchange equipments and apparently is provided for the purpose of permitting storage batteries at certain remote switching points being kept fully charged without requiring a special supervision. At certain stages the automatic switching



mechanism establishes a circuit condition which permits of a battery charging current being projected over one wire of the trunk circuit and thus charging the batteries at the remaining terminus of the trunk circuit. This usually being a point where no charging facilities are available.

No. 835,037. Telephone repeater circuit and apparatus.—Shreeve.

The circuit which is shown gives a general idea of the connections of a telephone repeater which it is reported is giving very encouraging results. The present invention is directed at providing a method for balancing the two halves of a circuit against each other for the pur-

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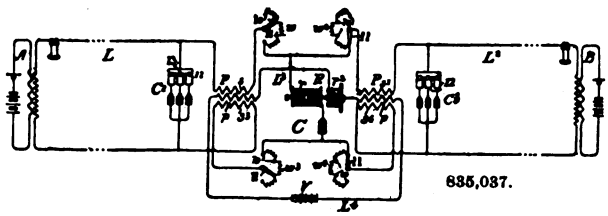
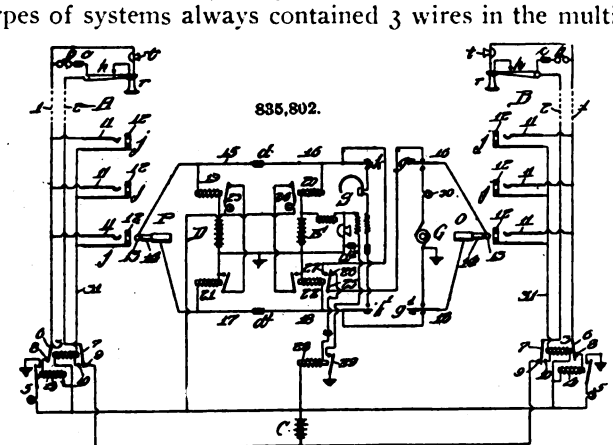
pose of preventing the receiver of the repeating station from saying something to the transmitter and producing the effect ordinarily known as "singing" or "howling" transmitter, which effect it is well understood is obtained



while placing a receiver before a transmitter and starting it to sing either by whistling or talking into the instrument. When both sides of the circuit, however, are kept perfectly balanced, and while using the circuit shown in the diagram, it is claimed that the combination of receiver and microphone will not start the singing.

No. 835,802. Telephone Exchange System.—Webster.

Multiple switchboard systems as originally designed contained 3 or more wires for each line circuit throughout the multiple and also, as a rule, contained 3 conductors in the cord circuit., i. e., the line circuits of the better types of systems always contained 3 wires in the multiple



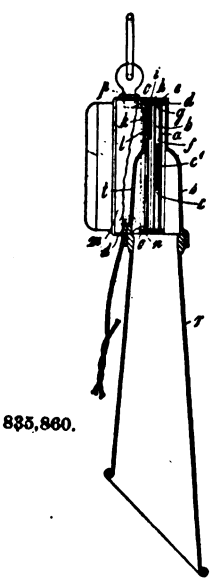
and the cord circuits were of the 3 conductor type. In the later systems the line and cord circuits were made of a 2 conductor type whereas the present inventor goes half way by divising a 3 wire multiple circuit and 2 wire cord circuits. The system being so arranged that current is supplied to line for talking purposes over the cord circuit through suitably connected relays and while supplying current to the line a cut-off relay connected to a 3d limb of the multiple circuit is energized and in this manner accomplishes the required results. The illustration clearly shows the method of operation.

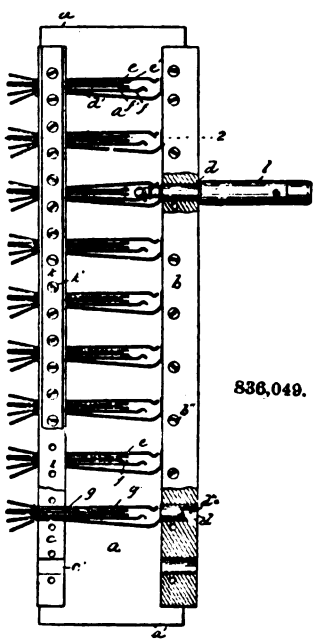
No. 835,860. Microphone Telephone.—Lind.

This is an instrument of the combined transmitter and receiver type where while holding the receiver to one's ear the transmitter mouthpiece is at the same time placed close to the speaker's mouth. One of the advantages claimed for the present invention is that the air vibrations strike both sides of the diaphragm at the same instant, and further, that the transmitter diaphragms are removed from the speaker's mouth so as to prevent any undesirable sanitary conditions through the speaker's breath coming in direct contact with the diaphragm.

No. 836,049. Spring Jack Switch.—North.

When a large number of spring jacks are required to be installed in a small space it is necessary that the distance between the centers of the different spring jacks be as small as possible. The original spring jacks were constructed in separate units. On the advent of the multiple switchboards this practice was abandoned and large blocks of rubber were grooved, slotted and so cut as to permit of mounting the springs in as small a space as possible. In late years, however, a method of construction has been adopted in which a smaller amount of rubber is used by mounting the front strip of the jack,





which is of rubber, on a metal plate, and further, of mounting a rubber strip on the rear portion of the metal plate for the purpose of permitting the jack spring to be clamped and held in place. This invention is directed at accomplishing this result in a certain advantageous manner.

No. 836,202. Telephone Receiver Switch.—McMahon.

It is said that on farmers' lines, particularly after the chores have been taken care of, that the telephone receiver is practically continuously removed from the hook switch, and held in a suitable position by every subscriber to the service so that everything going on over the line may be heard and understood. Sometimes the

receiver may even be left off the switch for hours at a time and in this manner not only run the batteries down, but also tie up the line from a signaling standpoint.

The present invention is so arranged that before one can speak or listen at a telephone, a lever placed within the receiver must be pressed for the purpose of closing the local battery circuit and connecting the receiver to the line. The illustration shows this arrangement very clearly. Of course the usual hook switch is a useless article when this device is applied.

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No. 836,581. Means for eliminating or reducing the influence of disturbing currents on telephone circuits.—Jacobs.

This invention consists simply of winding the telephone receiver coils with parallel wires. Say when the receiver coil is wound you wind 2 wires alongside of each other throughout the entire operation. Now connect the terminal of one coil to the line wire and terminal of the remaining wire to the earth, leave the opposite ends of the 2 windings open, and you have the invention complete.

This device, it is claimed, will reduce the disturbing influence while operating a telephone circuit in conjunction with a telegraph circuit on the same line wire.

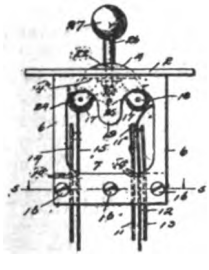
No. 836,612. Regulating device for telephone relays and transmitters.—Shreeve.

All those who are gradually becoming to be considered pioneers in the Independent telephone business will remember the different methods adopted in the early '90s for overcoming the tendency of telephone transmitters to pack down and be practically "dead" until one had hit the instrument with anything handy at the moment so that the carbon granules would be shaken up, and thereafter attend to their business at least while the party was using the telephone.

When an arrangement was finally devised for giving the transmitter movement a few whirls while calling central, this most effectually accomplished the results through thoroughly shaking up the carbon. However, since those early days no great effort appears to have been made towards reducing the packing tendency of transmitters. In the present invention a portion of the microphone movement is attached to an iron armature in such a manner that when a current flows through a properly placed electro magnet, the iron armature is attracted and the carbon granules are in this manner shook up. The energizing of the electro-magnet is accomplished by taking advantage of the fact that when the transmitter packs it also reduces its resistance, and when this transmitter is then connected in series with the electro-magnet, obviously a lowering of the transmitter resistance will increase the power of the electro-magnet and through the armature being drawn up, it agitates the carbon granules. This again raises the resistance of the transmitter and reduces the power of the electro-magnet.

No. 836,668. Operator's Key.—Carliss.

In telephone switchboards switching keys of different characters are always used. The present invention is

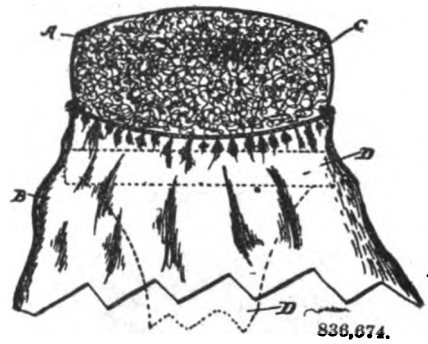


836,668.

directed at producing a type of key in which the friction of the different moving parts is reduced to a minimum. Several roller bearings of insulation materials are provided as a pressure contact medium between the lever of the key and the spring.

No. 836,674. Sound Sensitizer.—Frank.

The invention consists of making a small bag containing feathers and placing this bag against the ear piece of a telephone receiver. It is claimed that when this arrangement is pressed to a telephone user's ear, it



836,674.

causes the sound to be heard with great clearness and distinctness.

No. 836,863. Process of Making Electric Condensers.—Clausen.

Electric condensers for telephone use are as a rule made up by rolling together alternate sheets of tin foil and insulating paper. After the required number of sheets of paper and tin foil have been rolled up in a sandwich shape, the entire article is placed into a bath of boiling paraffine and thoroughly saturated. In the present invention the paper and tin foil are rolled together, but in the process of rolling them together the different strips pass through a bath of hot paraffine, and in this manner, the paper and tin foil are thoroughly saturated with the paraffine. After having been prepared in this manner the sandwich shape condenser is again produced and it is claimed that the time necessary for excluding all the moisture from the condenser is materially reduced, and, at the same time, the insulation resistance and capacity of the condenser increased.

It was Good to be Thanked

A pretty telephone story told by the Congregationalist, a religious weekly published in Boston, is worth reprinting. As the light from 349M flashed up, says this story, the telephone girl sighed impatiently. Even "hello girls" are tired sometimes, though we are apt to think of them as a part of the electric apparatus. Today Central was tired, her head ached, she had just succeeded, after repeated calls, in getting the number wanted by 349M and here they were, calling her up again!

"Can't that woman be quiet a minute?" soliloquized Central, while she reiterated, "Number, please?" trying not to speak crossly

"Central," said a pleasant voice, "I want to thank you for taking so much trouble to get me that last number You are always very kind and obliging, and I do appreciate it."

The surprise was so great, so overwhelming, that Central could only murmur, confusedly: "I—O—yes, ma'am."

Nothing like this had ever happened before. Suddenly the headache was better; suddenly the day was brighter; suddenly, too, there came a lump in her throat and she reached for her handkerchief. It was so good to be thanked.

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Independent Telephone Development

BY JAMES B. HOGE.

(Address delivered before Franklin Institute, Philadelphia, November 22, 1906.)

Considered from the standpoint of practical utility and convenience, the telephone is the greatest invention of this progressive and inventive age. It may be justly claimed that its adoption marks an epoch in human progress, since its use has done more for all practical purposes to annihilate time and distance than any other method of communication or transportation. Few perhaps think of the telephone in connection with

JAMES B. HOGE,
President International Independent Telephone Association.

transportation, yet to-day it is doing very much to make travel in many instances unnecessary. Stop a moment and consider how much more crowded the streets of your city would be if it was not for the use of the telephone. "Don't travel—telephone," is a sound maxim that is being very generally observed.

I ask your pardon for digressing a few moments to call attention to what seems to be an inherent human instinct, the desire for rapid means of communication. We see it manifested even among savage peoples, and explorers tell us of a unique plan in use by the tribes of certain hill countries. A messenger is dispatched to the top of the nearest hill and shouts his message, using a code of whoops and yells, to the next messenger, who transmits it in like manner from the next hill top, and so on. By this means, we are told, the tribes could communicate very rapidly with each other. The American Indians at the time this country was discovered had a well developed system of smoke signals, which enabled them to transmit intelligence regarding the movements of their enemies or any important matter in a very brief space of time. Numerous methods were employed by the early settlers for communication between centers of population: we find the slow going messenger wending his way over hill and dale, the lumbering stage coach, making its way over the old National pike, and other post roads, with a few passengers and heavy mail pouches, with relays of horses and drivers, covering at best from forty to sixty miles a day; the more rapid pony rider mail carrier, often averaging 100 miles a day. Then there was the wigwag system, seldom, if ever, used in civil life, but employed in military circles. Then the steam railway, a wonderful improvement over the stage coach, reaching at first, in a limited way, the principal centers of population over circuitous routes, with heavy grades and crude construction, but passing from improvement to improvement and developing into the wonderful railway system of to-day that makes possible our Twentieth Century Limiteds, traveling palaces, rushing across the country with their precious human freight, conveying the United States mail from this city to Chicago, a distance of 825 miles, in 16 hours.

Now, as a crowning achievement in methods of communication, we have the telephone, which, like all other electrical inventions, was made possible by the one whom you have seen fit to honor by naming your institute after, who with his kite discovered that wonderful, mysterious fluid we call electricity, leaving its great power, its varied applications, as a problem for future generations to utilize for their profit and pleasure. Truly the citizens of the civilized world owe to Benjamin Franklin a debt of gratitude which will carry his name down to future ages as a benefactor of mankind. Far seeing as he was, he could scarcely have imagined the extensive use of his discovery, the wonderful inventions and progress in which it would result, and could he revisit this city to-night, he would not believe that it was his discovery that made possible the beautiful lights upon your streets and in this auditorium, the power that moves your street cars, that operates your telegraph instruments, and that beneath your streets are thousands of miles of copper wire, over which conversations are being carried on between parties located many miles apart, as clearly and distinctly as though the speakers were in the same room. This is indeed a wonderful age and the telephone is not the least of its wonders.

To return to our subject, the first public record of a device for the transmission of speech over an electric conductor appeared on August 18, 1854, in a magazine published in Paris, known as the "Illustrated Universal Journal," giving an account of a crude apparatus constructed by Charles Boursel, a soldier in the African army, who had attracted attention by delivering a course of mathematical lectures to his comrades in a garrison in Algiers in 1848. Boursel, in describing and explaining his apparatus, made the startling announcement that "The spoken word in Vienna could be instantly transmitted by electricity to Paris." Nothing is on record to show that Boursel made any practical use of his invention, but in 1861 Philip Reis, a teacher in a boys' school in Fredericksdorf, near Hamburg, Germany, came before the public with an apparatus with which he claimed he was "enabled to reproduce the tones of various instruments and even to a certain extent of the human voice." Reis called his invention the telephone, the name by which it has since been known. He also manufactured and sold the apparatus in a limited way. As early as 1860, Daniel Drawbaugh, of Eberly's Mills, Pa., a little town of half a thousand inhabitants, about ten miles southwest of Harrisburg, in the Cumberland Valley, was endeavoring by experiments with the primitive appliances within his reach to convey vocal sounds over an electric wire. There is nothing to indicate that he ever heard of Boursel or Reis, but between 1867 and 1869 he succeeded in constructing an apparatus consisting mainly of a glass tumbler, a tin cup and a mustard can, connected through a membrane, by means of a wire leading from a battery, with another instrument placed some distance away, over which he was able to transmit vocal sounds of a certain range. The device was crude, and Drawbaugh was not sufficiently skilled to comprehend or explain the scientific principles involved.

On February 14, 1876, two petitions were filed in the United States Patent Office, making application for a patent on the telephone, each describing it as an invention for "transmitting vocal sounds telegraphically." One was a formal application by Alexander Graham Bell, of Massachusetts, the other a caveat on the part of Elisha Gray, of Illinois. It was a coincidence without parallel in the history of the Patent Office, as both covered practically the same ground, and involved the same points. However, the patent was granted to Bell, on March 7th, less than a month after the application had been made. One of the first instruments manufactured was exhibited at the Philadelphia Centennial that year.

Immediately after the patent had been granted, the Bell Telephone company was organized under the laws of the state of Massachusetts. Later the Western Union Telegraph Company secured control of Gray's device, with improvements thereon by Edison, and started in the business of installing and operating telephone exchanges in direct competition with the Bell Telephone company. The latter realizing that their anticipated monopoly was in serious danger lost no time in ridding themselves of competition. A deal was promptly made with the Western Union, then suits were brought against all

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of the Bell's other competitors to enjoin them permanently from using telephone apparatus. This case reached the United States Supreme Court in 1888, and was heard before seven judges, four favoring the Bell company and three dissenting. The dissenting members of the Court based their opinion on their belief in the priority of the invention of Daniel Drawbaugh of this state.

The Bell company, being put in possession of the controlling patents by the United States Supreme Court, and having made their arrangements with the Western Union to keep out of the field, apparently felt there was nothing further to fear from competition. Accordingly they continued the business policy which they had inaugurated, charging exorbitant rates and restricting the service, preferring to do a small business at high prices to popularizing the service at reasonable rates. The treatment of patrons, as might be expected from a gigantic corporation having such a complete monopoly, was arbitrary in the extreme.

The telephone business of the country continued with this policy of management until the patents expired in 1894. In December of that year, there were 291,253 complete telephones installed in the United States, or approximately one for every 240 persons. By this time, the public had become so thoroughly aroused over the fact that they were prohibited from enjoying what seemed to them a wonderful convenience, if not an absolutely necessity, that people from all walks of life in every community were ready to go into the business, not so much with a view of financial gain as for the purpose of securing the telephone service they needed. The Bell management felt certain that the invention of Emile Berliner, whose patents they had purchased and which were filed in the Patent Office June 4, 1877, but not issued until November 17, 1891, would prolong the monopoly of the business until at least 1908; so when competition was threatened, every officer of an Independent company, as well as every subscriber to an Independent telephone, received a notice from the Bell Telephone company that they were infringing patent No. 463,569 of Emile Berliner, which the Bell owned, and that they would be held responsible for infringement and damages. Nor was this an idle threat; in nearly every instance previous to 1888, upon the rendering of decisions favorable to the Bell, Independent companies were driven out of business and their equipment reduced to scrap and burnt, widespread publicity being given to such cases as a warning to other foolhardy investors, who might dare to invade the field of the Bell monopoly. It required courage in those days to engage in the Independent telephone business, when the investors faced the prospect of being prosecuted for infringement, and having their property confiscated and destroyed. Yet courage and faith were not lacking among the pioneers of the industry, and the present extensive system is a monument to their daring and perseverance.

Feeling the hopelessness of fighting the Bell single-handed, some of the prominent men in the Independent movement invited representatives of all the known companies in the United States to come together in Detroit, Michigan, on June 22, 1897, for the purpose of forming an organization for mutual protection. This organization was effected, and a substantial sum subscribed to defray the expenses of fighting the patent cases through the Supreme Court of the United States, if necessary. One after another these cases were carried through and won by the Independent interests.

Telephone apparatus at the time the patents expired in 1894 was very crude, the service was slow and transmission unsatisfactory. To supply the widespread demand for apparatus, Independent manufacturing companies started up almost immediately, improvements were made on the apparatus, competition between the different interests put all on their mettle, and more was accomplished between 1896 and 1900 in the way of improving the apparatus and service, and extending the use of the telephone, than had been done in twenty years previous. Prior to 1896, a telephone in the country was a decided novelty; to-day it is so common as to attract no special attention. After establishing themselves in the smaller cities, the Independents extended their lines out into the country, reaching all the postoffices in a county; then the farmers began to organize companies and build, bringing their lines into the different postoffice centers where exchanges were installed, each county becoming a net work of wires. This service has been constantly increasing, finances for its development being in most cases furnished locally, until to-day there is over three hundred millions dollars invested in Independent telephone properties, with more than three and a half million telephones installed and several hundred thousand miles of long distance toll lines connecting the different exchanges. The people in many of the larger cities, where the Bell was furnishing telephone service, were slow to appreciate the advantages to be derived from competition. They realized very often that they were paying more than their service was worth, and that there was a great deal of room for improvement in both the service and treatment, but dreaded to burden themselves with two telephones, "the double telephone nuisance" as the Bell taught them to consider it. In many cases where the citizens were willing, in fact anxious to have an Independent exchange installed, they were prevented through the Bell's control of their chosen representatives, who sometimes placed their own pecuniary gain above the welfare of the people they were elected to serve. If this entire history was written up by Miss Tarbell or some of the other well known writers, who have made a specialty of corporate methods, it would prove equally interesting and enlightening as the record of the Standard Oil Company or any of the other great trusts. One by one, however, the Independents have won their fight for entrance into the larger cities, the common sense of the citizens, when the real facts regarding telephone competition had been made clear to them, demanding Independent companies as the only means of securing justice in telephone rates and service.

Sometimes the Independent companies, in the early days, after obtaining franchises were unable to develop their property in the face of the greatly reduced rates, or even absolutely free service promptly offered by the Bell company, and were forced to retire or sell out to the monopoly. Wherever this has happened, with scarcely an exception, another Independent company has been formed, proper provisions being made to prevent a like occurrence. One or two examples may not be amiss. A few years ago an Independent plant was installed at Portland, Oregon, and forced the Bell to reduce its rates and improve service; it was not strong enough, however, to withstand the continued attacks of the Bell company, backed by other corporations and political power in control, and finally sold out; rates were at once raised and service became unsatisfactory from an operating standpoint. On December 7, 1904, an application for another Independent franchise was presented, and after a fight which brought the matter into politics, upon the petition of 10,000 voters the matter was submitted to a vote of the people the following June. The result was 12,213 votes for and 500 against the franchise. Evidently the citizens of Portland prefer competition to monopoly after having tried both. At South Bend, Indiana, the first Independent company was forced to abandon the field, but its successor to-day has over 3,000 telephones in South Bend against about 900 of the Bell, although the rates of the latter are lower at present. In the entire county the Independents have 5,000; the Bell about 1,000. Perhaps the South Bend people do not forget that it was not until competition was introduced that rates were lowered, and that when the first Independent company had been removed from the field rates were promptly raised. No doubt they also appreciate that the present extensive development is due to competition, for under monopoly the Bell had only 240 subscribers, and showed no disposition to extend its service.

On November 6th, the citizens of Omaha, Nebraska, at the regular election ratified an Independent franchise by a vote of 7,653 to 3,625. The Independent victory there marks the close of as fierce a fight as the Bell has ever made in any city of the country against the entrance of competition. For over three years this struggle has been going on, the Bell using every influence and sparing no expense in its efforts to retain its monopoly. There is a reason for its activity, for with Omaha added to the Independent list, the Bell's one claim to the toll service of the country surrounding it has disappeared, since in all of the territory tributary to Omaha the Independents outnumber the Bell. In Nebraska the Independents have approximately seventy-five thousand (75,000) telephones. In Iowa the Independents have over one hundred and eighty-five thousand (185,000), a total of two hundred and sixty thousand (260,000) in the two states; the Bell has only, approximately, eighty thousand (80,000) in the same territory. With Omaha built it will give the Independent companies at least forty thousand (40,000) additional telephones in the two states in three years, and completes the system in that section.

At the November election, Denver, Colorado, also voted in favor of an Independent franchise. Last summer one was granted at San Francisco, and within the last ten days the Independents have been given a franchise at Milwaukee. These cities with Omaha are the only ones of special consequence, except Cincinnati and Chicago, west of the Ohio river, where the Independents are not strongly intrenched or building. In

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Chicago a franchise has already been granted and the Independent company has over forty miles of tunnel under the city streets, this tunnel also being used for hauling freight. The telephone part of this property is controlled by a number of Chicago citizens and railway and telephone interests surrounding the city. It has lately been leased with all franchise rights to a syndicate of well known active Independent operators, who have completed their arrangements to see that it is fully developed, and Independent long distance connections given the numerous cities surrounding the metropolis, who have been clamoring vainly until now for such connections.

Speaking of the Bell Telephone company, and its "iron grasp" upon the City of Chicago, Corporation Council Lewis said, "Here in this community there is no monopoly which has seized her more ruthlessly, which has ground her more oppressively, or which has more outraged or wronged her people than the telephone company." In the very near future this "ruthless," "grinding," "oppressive" monopoly will be once more forced to reckon with Independent competition, which there is no reason to doubt will bring the same relief to the citizens of Chicago as it has to those of other places.

In other lines of business, competition has been the life of trade; the telephone business has not proved an exception. When the electric light was invented, many of the (artificial) gas companies that had been charging from $3.00 to $4.00 per thousand cubic feet were inclined to believe that their business was ruined. Forced by necessity, they began to study their economies, and by marketing their by products and the introduction of new devices for the use of fuel gas, they were enabled to develop a day and night load, as well as a winter and summer load, which made it possible for them to reduce the price of gas to an average of $1.00 per thousand cubic feet, bringing it into competition with coal for cooking and heating. To-day there is practically no limit to the amount of light and heat required in this country. So it is with the telephone; there is more business in this country to-day than both systems can properly take care of, and the more rapid their development, the greater will the demand become until every one desiring telephone service has been satisfied—and who can say whether that condition will ever be reached?

There are approximately 7,000,000 telephones connected with both the Independent and Bell exchanges in the United States. If the development throughout the country was as great as in some counties of the central states, it would require at least 14,000,000 telephones, twice the number at present installed. Without competition, there would be less than 2,000,000 telephones in the United States at present; equipment would be crude, rates high, the service unsatisfactory, and the management arbitrary. The small towns and the rural districts and millions of residents and small business men in our cities would be deprived of the greatest convenience of modern times. Not only has competition as represented by the Independent companies offered lower rates, better service through the use of improved apparatus, more courteous treatment, and developed territory hitherto untouched, but it has forced the Bell to do likewise in sheer self-defence. While installing its own 3,500,000 Independent instruments, competition has compelled the Bell to increase in eleven years to ten times the number of telephones it had in service at the expiration of its more than seventeen years of absolute monopoly.

See what competition has done in your own city. Prior to 1900, when the Keystone company secured their franchise, you are reported to have had approximately 10,000 telephones; to-day, six years later, you have approximately 70,000 telephones with a superior service and more reasonable rates. The experience in other cities is similar. Cleveland had less than 6,000 telephones when competition was started in 1900, and to-day there are approximately 50,000 telephones; business rates have been reduced from $120.00 to $72.00 per annum; residence rates reduced from $72.00 to $48.00, with party line residence rates as low as $24.00 per annum, thus bringing the telephone within reach of all the citizens. The same results have followed the introduction of competition in all of the cities of any size, while the smaller places and the rural districts were deprived of the service entirely until furnished by the Independents.

I should like to call your attention to the present situation in Canada, where the Independent movement is of very recent growth, and the business still largely a monopoly, conditions analogous to our own a few years ago. I think a study of the situation there will convince the most skeptical that the extensive development of the telephone in the United States is directly due to competition.

Recognizing the necessity for improvement in telephone conditions, the government of Manitoba appointed a select committee to inquire into and report regarding the various telephone systems. A similar committee had been previously appointed by the Dominion Government and had held its sittings in Ottawa; testimony taken before it filled two large volumes of an average of about one thousand pages each. The Manitoba committee, after making a thorough investigation of its own, and carefully considering evidence presented before the Dominion Committee, reported to their Assembly. This body, after careful deliberation, decided to take the necessary steps to enable the Manitoba Government to construct and operate its own telephone system, and to petition the Canadian Parliament and the Crown to permit the expropriation of the Bell Telephone company's plant and to refuse an extension to that company's capital. The Honorable Colin Campbell, Attorney General of Manitoba, in a speech before the Assembly, attributed the telephone legislation "To the growth of the Independent telephone companies in the United States, to the costly and limited service of the Bell Telephone company, and the natural objection of the people of Canada to a monopoly."

The decision of the Committee, as set forth in its report and the debate with reference to the proposed legislation, was that the telephone is a necessary part of civilization, and is such a public utility that it should be operated to serve the people as a whole, and give to every one an opportunity to enjoy its advantages at the lowest cost. It was pointed out that the system of telephones can not be considered complete until every residence, including the farm house in convenient places, has been connected with every other; that the use of the telephone will continue to increase until it has been installed not only in every place of business, but in the home of every citizen. Special stress was laid upon the need of the telephone in the homes of farmers. It was urged that the present rates charged in Canada for telephone service are exorbitant and that a considerable reduction could be made; that the rural telephone system is absolutely neglected and discouraged at present; that the service of the Bell is unsatisfactory and too costly, and that no progress can be looked for from that corporation.

The League of Canadian Municipalities concurs in this view. In a letter to the Postmaster General of Canada, who conducted the inquiry held at Ottawa, the Secretary of the League, in setting forth the views of that body, says: "There is a very widespread conviction, based on what appears to be a solid ground of fact, that the Bell company's rates are far higher than they ought to be. If my own inquiries into the matter are of any use, and I may say that I have followed it without any prejudice, weighing many statements and much published matter on both sides, I consider that the progress of the use of the telephone as a home comfort among the mass of our people is immensely retarded by the present virtual monopoly."

In commenting on the progress of the Independent companies in the United States, the Committee reports that "everywhere the entrance of such companies into the field has resulted in the furnishing of satisfactory service at much lower rates than had previously obtained and in the immense extension of the use of the telephone. A noticeable feature of the telephone development in the United States was the large number of long distance lines and lines giving intercommunication in rural districts." The report further states "That it has been demonstrated to the Committee that long distance communications to the south may be easily obtained through the Independent telephone companies in the United States."

It goes on to show that the general result of competition in the United States has been an immense extension of the telephone in all directions, and especially to the farmer, and a great reduction in rates; that in many cases both 'phones could be rented for the price formerly paid for one, and that in places where the charge for both 'phones is higher than for one, it was inconsiderable and more than compensated for by the increased and improved service. Regarding the relative desirability of the single or dual systems, Attorney General Campbell says: "I agree that it is undesirable to have two companies if possible to obviate such conditions, but if we cannot get competition we cannot get a reduction of price, and if we can only get the benefit of competition for the people by entering into the operation of telephones, both as a province and as municipalities, I think we would be justified in so doing."

Among the evidence considered by the Committee were communications from business men regarding the actual working of telephone competition. The following is a summary of 1,400 answers from 189 exchanges in the United States to five questions addressed by an American banker to leading business men at such places. This evidence is valuable, com-

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ing, as it does, from our fellow-citizens who are users of the telephone:

Question 1. Has competition resulted in better telephone service in your city? (a) As given by the Independent telephone company.

Answers—Affirmative, 1,245; negative, 26.

(b) By an improved service on the part of the Bell Co.? Answer—Affirmative, 982; negative, 154.

Question 2. Has competition increased the number of telephone subscribers? Answers—Affirmative, 1,251; negative, 8.

Question 3. Has competition brought about greater civility and more courteous attention to the wants of the subscribers? Answers—Affirmative, 1,222; negative, 37.

Question 4. Have rates for telephone service been reduced by the advent of competition. (a) By the reduction of Bell rates formerly charged? Answers—Affirmative, 979; negative, 120.

(b) By the establishment of rates by the Independent company lower than formerly prevailed? Answers—Affirmative, 1,236; negative, 45.

Question 5. In your judgment, would it be preferable to return to the conditions prevailing before the advent of the Independent company? Answers—No, 1,245; yes, 14.

Of this last fourteen, all but five qualified their answers, favoring a return to a single system only upon condition that they would be given the same service as they were now receiving and at the same price. Many of the other answers were very emphatic in opposing a return to conditions existing before competition.

The Manitoba Government, recognizing the futility of attempting to secure better telephone conditions from the Bell, is determined to establish a governmental system, and will endeavor to obtain the power to expropriate the Bell plant; should this be denied, however, it will nevertheless, if the people approve of the policy, build its own lines and exchanges, believing that competition will accomplish the desired results, as it has in the United States.

The Union of Manitoba Municipalities at a meeting last week, after spending two days in listening to testimony from telephone experts and officers, and then devoting a half day to discussion, at the close of its session, by a vote of eighty-six (86) to nineteen (19), passed a resolution recommending the municipalities in the Province to put in their own telephone systems in competition with the Bell. As already stated, telephone competition in Canada is practically in its infancy. The Bell Telephone company had made exclusive contracts with many of the railways and other corporations, some of which are now expiring. This, prior to the last two years, had made it almost impossible for the Independent companies to obtain a foothold. At the close of 1904 the Bell had approximately one telephone for every ninety (90) inhabitants. Their last report shows 78,195, or one to every seventy (70) inhabitants. The Independent companies in the meanwhile have installed 12,500 telephones, and everything indicates that they will make a gain of 200 per cent. in the coming year. In the state of Indiana, which has a population of approximately one-half of the Dominion of Canada, there is one Independent telephone for every fourteen persons, and in that state the Independents outnumber the Bell about three to one.

The Independent telephone interests to-day have a good organization, known as the International Independent Telephone Association of America. The organization formed in Detroit in 1897 for the purpose of defending damage cases brought by the Bell, finished its work by winning the last of the patent cases in 1904. In 1905 the Association was re-organized in Chicago under what is known as the "Ohio Plan." This plan starts with an organization in each state, which usually divides it into districts to suit local conditions, each of the districts having a complete organization of its own, subject to the control of the state body. The various companies are represented on the basis of the units they operate, a unit being one telephone or circuit mile of toll line. The district organization select delegates to the annual meeting of the State Association on the basis of one representative for every one thousand units operated by their members. One delegate to the International Convention is allowed for each 10,000 units in the state. Each district selects a delegate to this convention, the remainder necessary to make up the full quota being elected at the state meeting as delegates-at-large. At the district meetings all questions with reference to traffic conditions between the companies, the development of territory, etc., are considered. At the state meetings matters of general importance to the movement in the state are taken up.

The International Association holds its annual Convention between May 1st and July 1st. Permanent headquarters are maintained in Cleveland, where a corps of secretaries and a map maker are employed for the purpose of keeping in touch with the development in the various states. At present there are over 7,000 Independent companies operating in over 12,000 cities and villages.

Our plan of organization is not a new one; it is based upon the Federal plan of Government, which has been in use in the counties, Congressional districts and states of the Union for more than a century. I believe it was Benjamin Franklin who first proposed a plan of this kind in 1754. It was known as the Albany plan, and outlined the formation of a separate government in each of the colonies, to be brought together in a central government for all of the united colonies. The plan under which our Association is operating seems broad enough to cover every possible contingency in keeping the Independent interests working together in harmony and as a complete system. It is often difficult for those not interested in the Independent telephone business to understand the enthusiasm of the people engaged in it. It is more than a mere means of livelihood to them; it is a *cause*, something worth fighting for. Perhaps this is true of any particular line of effort, but in no other, I think, to such an extent as in the Independent telephone business. This feeling is probably due in a measure to the interest attaching to the development of the industry, but more, I believe, to the conviction of practically all engaged in it that they are doing their part in a movement to benefit mankind. This feeling was never better expressed than by Judge Robert S. Taylor, who was appointed by President Cleveland to represent the United States Government in the famous Berliner patent case. Judge Taylor, in addressing a meeting at Chicago last summer, said: "I have never done anything in my life which I did with so much heart and so much earnestness as the fights I have made for Independent Telephony. I have never done anything I have felt so well satisfied with. I have always considered that no movement in this country that has ever taken place carried with it so much of a blessing to the people as the Independent telephone movement."

Aside from its many commercial and social advantages, the telephone has performed a very important part in advancing civilization, and there is little doubt that there would be much more 'crime' in the United States to-day were it not for the extensive use of the telephone. This, I think, is particularly true of the rural districts. The use of the telephone has lessened profanity; it is seldom that a profane word is heard over the wire; it has broadened all who use it to any extent in the choice of their language; something seems to prompt people using the telephone to talk their best. Of course, there are exceptions, but very little investigation on the part of any one will demonstrate the general truth of the statements just made.

There are to-day and will continue to be two great telephone systems; one, as at present, controlled and operated as a trust; the other, the Independent, operated as a complete system, reaching practically every farmer, all of the towns, and every important business center in the United States and Canada. The control of the securities and the management of the various companies making up this system to remain with local people. Consolidations will undoubtedly be made here and there to bring these companies into convenient groups, which in many cases will be county groups or Congressional District groups, tributary to large centers, reaching out a distance of fifty or one hundred miles. In my judgment, and I am by no means alone in this view, it would be unwise to consolidate them as one system, if, indeed, such a thing were possible. The telephone business is very largely a business of detail and requires the most careful management. This management must be in close touch with the other business interests of a community. No community can afford to depend upon a monopoly to supply its telephone service for the following reasons and many more that might be enumerated:

Competition: First—Guarantees fair rates. Second—Secures at least fair management and courteous treatment from both systems. Third— Stimulates the best thought of inventive minds in improving the apparatus, and the careful study of operating conditions with a view to greater efficiency.

Another advantage of competition—and I wish to call special attention to this because it is so often overlooked by the champions of a single system—is the almost absolute assurance it offers to the subscribers of both systems against being deprived, by accident, of their telephone service. Even if the 70,000 telephones in your city were controlled by one company, many of your business men would still be compelled to have at least two telephones to take care of their business. In case of exchange trouble, fire, strikes, cable or line trouble in any particular section, you might be completely deprived of

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the use of your telephones until such trouble had been cleared. With instruments connected to both exchanges, the chances for this are almost entirely obviated. It is very seldom that both of your instruments will be out of order at once. The advantage of this until demonstrated by actual experience, as it has been in many cases, is not generally appreciated.

The increase in the use of the telephone has so far exceeded the anticipation of the most optimistic that it is hard to predict what it will be in the future. It is estimated that the United States will have a population of 200,000,000 in 1950; that population will require at least 50,000,000 telephones, more than seven times the present number. The telephone while increasing in usefulness will also be made a still greater means of pleasure and entertainment, and will be utilized for the transmission of concerts, sermons, political addresses, etc.; in fact, the Keystone Telephone company of your city is now experimenting with such service.

Already the "seeing telephone," as exemplified in the "Televue," has been invented by J. B. Fowler, of San Diego, California. Long before 1950 this or a similar device will have been perfected, and by means of it one may not only converse over the telephone, but actually *see* the person with whom he is speaking. Through the use of such a device, the police department will be able to transmit not only the description, but the photograph of a criminal wanted and to identify one instantly no matter where captured. Think of the convenience of shopping by telephone when one can not only order but view the goods purchased. When the telephone has been brought to its highest stage of usefulness, as our friend, Mr. Dooley, remarks, "th' legs will be as good f'r nawthin' as the appendix."

This talk would be incomplete without some reference to Independent telephone securities, for the progress of any industry, no matter how useful, depends upon its ability to show proper returns upon the capital invested and to secure the capital necessary to its development. There is no reason to believe the Independent movement will be hampered through this cause. Already its securities are being favorably regarded by investors everywhere and they will, beyond question, in the very near future take their place on a par with the securities of other public serving corporations. There is no other utility which is in greater demand than the telephone, and statistics prove that panics have less effect on the gross income of wire using companies than on any others. It has been demonstrated that subscribers will economize, not only in luxuries but in their very necessities, in every way possible before giving up the telephone, and the telephone will continue to increase in usefulness and become a greater benefit and a more absolute necessity than at present. Thus the securities of the Independent telephone companies offer a safe and remunerative form of investment, and this fact thoroughly appreciated, there will be no lack of funds to develop the industry.

Telephony is desirable as a career for the young man. The electrical field is a broad one and experts do not believe that we have more than commenced to develop it. The telephone branch of the business offers peculiar advantages and attractions. With the marvelous growth there will come a demand for thousands of well trained young men in this field of labor. Already telephone courses have been established at universities and colleges, and the demand for some of the technically trained students is so great that employment is offered them before they have finished their course. As telephony progresses the men with technical training will be more and more in demand. I, therefore, commend this branch of the electrical field to the students of all technical schools as one worthy of their consideration. They will find that it not only offers them employment but will give them splendid opportunities for careful study and the development of economies and new improvements that will result in financial benefit to themselves and be of untold advantage to mankind.

Personal and Field Notes

DOMINION OF CANADA.

AT JORDAN STATION, ONT., a new line is to be constructed by the Independent Telephone Co.

THE PEOPLE AND MAYOR of Moncton, N. B., are favoring the construction of a municipal telephone system.

CHILLIWACK, B. C., now has a local telephone system of its own which is said to be well constructed and equipped.

THE DURHAM TELEPHONE UNION, Orono, Ont., which now controls about 130 'phones, is about to incorporate. It has toll connections with Bowmanville, Pontypool and Rice Lake, and is within four miles of Port Hope. It also connects with Dr. Beatty's lines at Newtonville.

GRATIFYING PROGRESS is reported by the Niagara District Independent Telephone Co. Twelve miles of poles have been placed and stock is being taken up rapidly.

THE OXBOW TELEPHONE CO. has been incorporated at Oxbow, Sask. T. H. Gregson is secretary and treasurer. The immediate building of a telephone system is contemplated.

CONSTRUCTION WORK has been begun on the Alberta government telephone line between Calgary and Bauff. The work is in charge of James Grierson, superintendent of construction.

SUPERINTENDENT G. V. REED of the Moose Jaw (Assiniboia) electric light plant has accepted the position of general manager of the electric power and telephone system at Kenora.

THE LOUISE TELEPHONE CO., Crystal City, Man., a co-operative organization, of which U. S. Jory is secretary, now has 200 telephones in use. The cost of operation is given at about $4 each per year.

THE BELL FRANCHISE at London, Ont., expires January 1, 1907. Its agents are making a hard fight to secure a renewal, but are opposed by able representatives of the Independent Telephone Co. of Ontario.

THE MERGER BETWEEN the New Brunswick and Central Telephone companies will be completed formally in January. In the equity court Mr. Justice Baker has dismissed the suit of the Cumberland Telephone Co. of Nova Scotia against the combination. The judge held that the merger was not against public policy because all contracts with other telephone companies would be carried out by the new combination.

THE PEOPLE OF LADNER, B. C., have concluded to organize a mutual telephone company in opposition to the British Columbia Telephone Co. They will co-operate with the Farmers' Mutual Telephone Co. of Lulu Island.

THE RECENTLY ORGANIZED Norfolk County Telephone Co., Limited, Waterford, Ont., will use an automatic equipment. Construction is now under way. James Ross is secretary and treasurer of the company, which has a capital of $40,000.

THE CITY COUNCIL of Edmonton, Alberta, has offered to install an extension of its automatic system at Strathcona, a town across the river, provided the latter will grant a twenty-year franchise. At present Strathcona is without telephones and the offer will probably be accepted.

THE TEMISKAMING TELEPHONE CO., with headquarters at New Liskeard, Ont., in the so-called "cobalt country," is making a splendid success. At present 350 telephones are in operation, with branch exchanges at Hayleybury, Cobalt and Ville Maries. Many extensions are planned for next spring.

THE BOARD OF TRADE of Thorold, Ont., is considering the advisability of establishing a municipal telephone system, the same to be run in connection with the municipally owned electric light plant. L. McMann, president of the organization is making special efforts to interest the council in the proposition.

THE BOARD OF DIRECTORS of the Welland County Telephone Co., Limited, St. Catharines, Ont., has been authorized to borrow $10,000 for the purpose of extending and improving the company's lines. The management of the same company also declined to enter into a long-distance contract with the Bell Company.

THE BELLECHASE TELEPHONE CO., with headquarters at Lewis, Quebec, is the largest Independent telephone organization in Canada. It has 200 branch exchanges, with 3,000 telephones. Dr. J. F. Demers, the manager of the system,

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is one of the ablest telephone men in the country, equally efficient as a professional and business adviser—a rare combination indeed.

THE SOUTH.

CITIZENS OF LORTON VALLEY, VA., have organized the Lorton Telephone Co., with a capital of $5,000.

THE HOME TELEPHONE CO., Jonesboro, Ark., expects to have its new system in operation by the first of the year.

DR. H. W. HENRY, Lake Weir, Fla., is interested in organizing a telephone company to connect Lake Weir with Ocala.

AT MENDOTA, VA., the Mendota Mutual Telephone Co. has been incorporated. C. O. Johnson is president and G. W. Hendricks, secretary.

THE MARFA POWER CO. has been organized at Marfa, Tex., for the purpose of building a light, ice and telephone plant. Capital, $3,500.

CITIZENS OF SYLVESTER, GA., and vicinity have organized the Sylvester Telephone and Telegraph Co., with an initial capital of $2,500.

THE GAFFNEY TELEPHONE CO., Gaffney, S. C., has disposed of its property and franchises to the Piedmont T. & T. Co., Gastonia, N. C.

THE CENTRAL HOME TELEPHONE CO., Owensboro, Ky., is about to install an additional switchboard and at present is rebuilding outside work.

THE CORPORATION COMMISSION of North Carolina expects to establish a uniform rate for telephone rental and toll charges for the entire state.

RADICAL IMPROVEMENTS, involving an expenditure of $20,000, will be made by the Consolidated Telephone Co. in and around Fairmont, W. Va.

AMONG THE NEW TEXAS corporations is the Washington Navasota Telephone Co., which was organized by H. C. Lehde and others, with a nominal capital of $750.

THE RECENTLY ORGANIZED Cleveland Telephone Co., Cleveland, Texas, has finished outside construction work and will be ready for business by January 1, 1907.

THE PRIILEGE OF BUILDING telephone lines in Dare county has been granted to the Tyrell County Telephone Co., of which D. O. Newberry, Columbia, N. C., is president.

THE HOME TELEPHONE CO., Mayfield, Ky., now practically has connections with every part of Graves county by means of 22 country exchanges with over 1,000 telephones.

THE TELEPHONE INTERESTS of Shelby and Henry counties, Ky., have been merged in the Shelby County Telephone Co., Shelbyville, Ky., of which H. W. Gillis is general manager.

ONE OF THE PROSPEROUS young southern organizations is the Yorkville Telephone Co., Yorkville, Tenn., which was organized in March, 1906, and already has 107 telephones in use.

THE CONTEST FOR CONTROL of the National Telephone Co., Wheeling, W. Va., has been settled by the purchase by John A. Howard of $100,000 stock owned by Col. Henry Schmulbach and his friends.

THE WINN PARISH TELEPHONE CO. has been organized at Royal, La., with a capital of $5,000. The officers are: President, Dr. C. W. Smith; vice president, W. W. McCarty; secretary and treasurer, J. J. Thornton.

THE PLANTS AND FRANCHISES of the Kentucky T. & T. Co., Winchester, Ky., have been bought by the Central Home Telephone Co., or Louisville. The price paid is said to be in the neighborhood of $100,000.

THE BURLINGTON TELEPHONE CO., Burlington, W. Va., has taken over all the country lines of the Chesapeake & Potomac Telephone Co. in the vicinity of Keyser. This gives the Burlington Company a very extensive system, covering practically all the territory south and east of Keyser, to the Virginia line.

THE REPORT COMES from Dallas, Tex., that the Consolidated Long Distance Telephone Co. is to be reorganized. Outside capital will be invited to invest in the company and a local franchise sought for the installation of an automatic system.

A NEW FORTY MILE TOLL LINE, 1½ circuits No. 12 iron, is being built by the Roberts Telephone & Electric Co., Abilene, Tex., between Abilene and Stanford, along the right of way of the Abilene & Northern railroad. Other circuits will be added as soon as traffic may justify.

THE PALESTINE TELEPHONE CO., Palestine, Tex., is making improvements involving an expenditure of $25,000. A second story, 50 by 100 feet in dimensions, is being added to the company's building and will be ready for occupancy February 1, 1907. A 40-year franchise has just been granted to the company by the city council.

EASTERN STATES.

THE VENANGO TELEPHONE CO., Venango, Pa., has built a number of important toll lines during the past two months.

THE STOCKHOLDERS of the Salix Telephone Co., Windber, Pa., have changed the name of the company to Windber Telephone Co.

CORNELIUS MAHONEY has succeeded Oscar Ackerman as secretary of the Niagara County Home Telephone Co., Niagara Falls, N. Y.

CITIZENS OF NEW CASTLE, PA., disgusted with the policy of extortion of the Bell Company, are trying to organize a co-operative telephone company.

THE YORK STATE TELEPHONE CO. expects to erect a handsome brick and stone building at Binghamton, N. Y., which is to be the headquarters of the system.

AT COCHRANTON, PA., the Merchants' and Farmers' Telephone Co. has been incorporated, with a capital of $25,000. J. H. Spear is president of the company.

THE BOROUGH COUNCIL of Waynesburg, Pa., has granted a franchise to the Greene County Telephone Co. for the erection of poles and wires on the borough streets.

THE PENNSYLVANIA TELEPHONE CO., Renfrew, Pa., has been organized for the purpose of building telephone lines in the southern part of Butler county. W. J. Burton is president and general manager.

BOTH HOUSES OF THE VERMONT legislation have passed House bill 231 which incorporates the franchise of the Vermont Home Telephone Co., Burlington, Vt. The bill has also been signed by the governor.

A CHARTER HAS JUST been received by the Northern Cambria Farmers' Telephone Co., Patton, Pa., of which H. M. Gooderham is president. The capital stock of the company, which is purely a farmers' line, is $5,000.

THE SPRINGVILLE TELEPHONE CO., Springville, N. Y., has elected the following officers for the ensuing year: President, M. N. Brooks; vice president and general manager, Frank H. Brace; secretary, H. Taylor; treasurer, I. H. Vail.

THE ENTIRE PLANT of the Colonial Telephone Co. at Newburgh, N. Y., has been sold to the Home Telephone Co. of Albany, for $15,000, subject to a bond issue of $85,000. The sale was ordered by the supreme court, in an action of the Union Trust Co. vs. The Colonial Telephone Co.

THE CONSOLIDATED TELEPHONE CO., through Charles West, general superintendent, Allentown, Pa., has negotiated a 999-year lease with the State Belt Telephone Co. of Northampton county. The lease includes 500 miles of lines and exchanges at Nazareth, Bath, Bangor, Pen Argyl and Portland. In the spring a line will be built from Portland to Stroudsburg, taking in the Delaware Water Gap.

THE UNITED MESSAGE CO., Albany, N. Y., has acquired the Commercial Union Telephone Co., operating in Troy, Glen Falls, Saratoga and about 20 other towns in New York state. This is in line with the work of taking over all the Independent telephone interests in the state as fast as thy can be acquired. The corporation, which is headed by Judge

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Hendrickson, recorder of the city of Albany, has a working capital of $35,000,000.

EXTENSIVE IMPROVEMENTS are being made by the Waterbury Automatic Telephone Co. in its exchange at Woodbury, Conn., of which R. F. Harvey is manager. The company has recently increased its capital to $22,500; and has three subscribers to one of the Bell in the territory it covers.

PROMINENT CITIZENS OF FITCHBURG and other towns in Worcester county, Mass., have incorporated the Worcester County Home Telephone Co. and applied for franchises at Fitchburg, Leominster, Gardner, Clinton and Worcester. The company expects to invest $2,500,000 in an ideal Independent system. Alexander H. Bullock, of the law firm of Bullock & Thayer, is clerk of the company. The president is William H. Cook, treasurer of the G. C. Whitney Manufacturing Co., Fitchburg, Mass.

THE CENTRAL STATES.

THE CITY COUNCIL OF FULTON, Ill., has granted an unlimited franchise to the Fulton Mutual Telephone Co.

THE CAPITAL STOCK of the Lake County Telephone Co., Libertyville, Ill., has been increased from $15,000 to $25,000.

W. HOWARD MOORE, for several years manager of the Knox County Home Telephone Co., Vincennes, Ind., has resigned.

THE CAPITAL STOCK of the Effingham County Telephone Co., Altamont, Ill., has been increased from $6,000 to $8,000.

W. F. WESTFALL, of the Westfall Telephone Exchange, Grayville, Ill., has applied for a franchise to the city council of Albion, Ill.

THE NEW OFFICE BUILDING of the Southern Michigan Telephone Co., at Coldwater, Mich., is now ready for occupancy.

THE HOME TELEPHONE CO., Bellevue, O., will change its service from magneto to central energy or automatic in the spring of 1907.

THE STROMBERG-CARLSON COMPANY is endeavoring to secure franchises at Benton Harbor, St. Joseph and Buchanan, Mich.

THE CITIZENS' TELEPHONE CO., Delaware, O., George H. Carter, general manager, has increased its capital stock from $125,000 to $200,000.

THE HOME TELEPHONE CO., Quincy, Ill., has built a line to Hannibal, Mo., where connection is made with the lines of the Bluff City Telephone Co.

THE UNDERGROUND WIRE SYSTEM of the Lafayette Telephone Co., Lafayette, Ind., will be completed January 1. The work will entail an outlay of $20,000.

THE CITIZENS' TELEPHONE CO., Grand Rapids, Mich., has built a No. 10 copper toll line from Traverse City to Kalkaska and one from Traverse City to Elk Rapids.

R. F. QUIGLEY, JR., has resigned as manager of the Vermilion Telephone Co., Vermilion, O., and is succeeded by A. J. Giddings, a telephone man of wide experience.

W. D. KAUFFMAN and C. O. Wilhelm, of Elkhart, Ind., are organizing an Independent telephone company at Dowagiac, Mich. Later on they will organize companies in other Bell strongholds.

JAMES W. MILLER, former superintendent of the Van Wert Home Telephone Co., and Frank Miller have purchased the exchange at Scott, Ohio, and contemplate making radical improvements.

THE HOME TELEPHONE CO., Lima, O., G. H. Matheny, manager, reports a prosperous year's business. The subscription list shows a net gain of 350, with 2,000 'phones now in service.

THE CUYAHOGA TELEPHONE CO., Cleveland, O., is completing plans for its new east end exchange. The strucure will cost about $30,000. New equipment which is to be installed, together with construction work, will cause an expenditure of probably $200,000.

HART F. FARWELL, who is secretary and manager of a number of companies affiliated with the Kinloch Company, has removed his office force and family from St. Louis to Terre Haute, Ind., his future home.

THE MOUNT VERNON TELEPHONE CO., Mt. Vernon, O., has increased its capital stock from $150,000 to $250,000. The new capital will be used to improve the system and for the construction of new extensions.

KLOPFENSTEIN BROTHERS, Leo, Ind., who are the owners of the Leo Independent Home Telephone Co., are building rural lines in all directions and thoroughly covering their territory and adjoining villages.

GROUND HAS BEEN BOUGHT by the Rushville Co-Operative Telephone Co., Rushville, Ind., for the purpose of erecting an exchange building. As soon as possible the system will be changed to central energy.

FARMERS LIVING NEAR WINFIELD, Tuscarawas county, O., have organized the Dover-Winfield Telephone Association, with headquarters at Canal Dover. Dr. O. S. Welty is president and J. E. Richardson secretary.

THE FOLLOWING OFFICERS have been elected by the Lerna Mutual Telephone Co., Lerna, Ill., for the ensuing year: President, John W. Riley; vice president, J. L. Connell; secretary, R. G. Hall; manager, E. L. Champion.

JAMES S. COON, Edmond G. Coon and Rose O. Coon have incorporated the Coon Brothers Telephone Co., with a capital of $60,000 and headuarters at Rantoul, Ill. The company has exchanges at Rantoul, Fisher, Gifford, Penfield, Armstrong, Potomac and Collison, Ill., with 1,100 telephones.

IN JUDGE BARBER'S COURT, Toledo, O., a verdict was returned against the Home Telephone Co. for $2,200 in favor of the estate of Earl Byrket, a 14-year-old boy who was killed by coming in contact with a low-hanging telephone wire which had been charged with electricity by contact with a live wire.

RADICAL IMPROVEMENTS are being made in the system of the Southern Michigan Telephone Co., which includes the prosperous towns of Burr Oak, Quincy, Nottawa, Allen and Coldwater. The improvements in the last named place include an exchange building and 100,000 feet of underground and aerial cable.

DURING THE COMING SPRING the Washtenaw Home Telephone Co., Ann Arbor, Mich., will extend its system in various directions. The company now has exchanges at Ann Arbor, Ypsilanti and Dexter, with pay station booths at Whitmore Lake, Portage Lake, Bass Lake and Saline. C. B. King is the general manager of the system.

THE CONTROLLING STOCK in the Akron Telephone Co., Akron, Ind., has been purchased by the Disko & Laketon Telephone Co., Disko, Ind., the latter company taking possession December 1. The purchase combines 100 miles of toll lines into a compact system and gives the new company 700 subscribers. E. L. Harman is secretary and general manager.

THE PORTSMOUTH TELEPHONE CO., Portsmouth, O., has recently issued $100,000 additional six per cent. cumulative preferred stock for the purpose of purchasing a new switchboard and additional outside equipment to take care of the increased demand for Independent telephones. The company, whose entire capitalization now is $200,000, has but recently built a handsome home of its own.

THE HOME TELEPHONE CO., Fort Wayne, Ind., has built new toll lines to Hunterton, to connect with all lines leading north. New trough toll connections will soon be in operation between Indianapolis and Fort Wayne, consisting of two No. 10 copper circuits. The same company has just completed cable and farm line extensions at its exchange in Sturgis, Mich., and increased its list of subscribers by over 100.

TWO DAMAGE SUITS brought against the Central Union Telephone Co., at Paris, Ill., have been settled out of court. Russell Duck and Hobart Wiley, aged respectively 13 and 9 years, were fatally burned by the overturning of a pot of paraffin which was being used by linemen in splicing a cable. Two suits for $10,000 damages each were filed. The company

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effected an adjustment by paying to the families of each of the victims the sum of $1,800.

WEST AND SOUTHWEST.

PORT ALLEGANY, P.A. The Commercial Union Telephone Co. of Pennsylvania has been granted a 50-year franchise by the councilmen of this borough.

THE HASTAIN TELEPHONE CO., Hastain, Mo., has been organized with the following officers: President, J. W. Stetson; vice president, G. P. Howell; treasurer, C. S. Hart.

THE TELEPHONE COMPANIES of Lewis county, Mo., are to be merged into one organization, with headquarters at Monticello. The capital of the consolidated company is to be $200,000.

THE FARMERS' TELEPHONE CO., Weatherford, Okla., has recently purchased a large supply of red cedar poles, a new switchboard and 135 telephones. J. H. Anderson is manager and secretary.

THE BOARD OF DIRECTORS of the Bluff City Telephone Co., Hannibal, Mo., has decided to replace many of the open wires with cables. The work will be done under the direction of Manager H. S. Janes.

THE VERSAILLES TELEPHONE CO., Versailles, Mo., has been sold by its owner, John Brokmeyer, to Dresie Bros., of St. Louis, for $12,500. The sale does not include Mr. Brokmeyer's exchange at Eldon, Mo.

THE NORTHERN TELEPHONE CO. has secured a franchise in Berthoud, Eaton, Ault and Evans, with exchanges established at Johnstown, Meade and Highland Lake. The capital stock of the company is $250,000, with headquarters at Berthoud, Col.

THE KANSAS STATE UNIVERSITY, Lawrence, Kas., has established a course of telephone operating. A large amount of special apparatus for the course has been installed. All details of telephone operating will be taught, with opportunity for actual practice.

THE RUSSELL EXCHANGE, Russell, Kas., of which W. T. Frier is manager, has just put in three blocks of underground construction, not including laterals. Russell is a town of 1,200 and the exchange has 205 subscribers. In other words, there is a telephone in almost every house—a record of which the exchange may well be proud.

DR. T. P. MARTIN, TAOS, N. M., owner of the Taos telephone system, recently has established branch exchanges at Talpa, the ranches of Taos, Arroyo Seco and Arroyo Hondo and at Servilletta. Rates for business 'phones are from $3 to $7.50 and for residence 'phones $2. Service was started November 1, 1906. A line is being built to Ute Creek, a distance of 46 miles.

THEODORE GARY, of Macon, Mo., has been elected president of the Citizens' Telephone Co., St. Joseph, Mo. The company is capitalized at $1,000,000. Bonds to the amount of $250,000 have been issued for making immediate improvements and a further issue of $750,000 bonds is to be made to provide funds to rebuild the plant. All the wires will be put underground and all other work and the equipment will be of the highest class.

WEST AND NORTHWEST.

THE CITY COUNCIL of Fremont, Iowa, has granted a franchise to the Farmers' and Merchants' Telephone Co.

THE ANNUAL MEETING of the South Dakota Telephone Association will be held at Sioux Falls, January 9 and 10, 1907.

WARD ROBERTS, formerly of New Market, has been appointed manager of the Farmers' Mutual Telephone Co., Clarinda, Iowa.

THE BOARD OF DIRECTORS of the new Omaha Independent Telephone Co. has let the contract for constructing its system to the Crescent Construction Co., of which F. H. Stowe, of Portland, Ore., is general manager. The contract involves the sum of $1,500,000. The equipment will be of the Strowger automatic type.

THE TELEPHONE EXCHANGE at Alton, Iowa, has been sold by L. L. Wilcox to Jelle Dykstra, who will take possession about March 1, 1907.

AT SPRING RANCH, Neb., the Spring Ranch Telephone Co., capital $10,000, has been organized by W. F. McReynolds and other local capitalists.

GENERAL MANAGER FISHER, of the Interstate Telephone Co., expects to put up an aeriel cable system at Sandpoint, Idaho, and to install a new switchboard.

CITIZENS OF DAYTON, IOWA, have organized the Dayton Mutual Telephone Co., with a capital of $25,000, for the purpose of establishing a compact county system.

AT BERESFORD, S. D., two new telephone companies have recently been incorporated. The North Star Telephone Co., with a capital of $25,000, and the Pleasant Telephone Co., with a capital of $10,000.

THE VALLEY TELEPHONE CO. has been organized by farmers living in the Buena Vista neighborhood, Portage county, Wis. Connection will be made with the exchange at Stevens Point, the county seat.

THE HOME TELEPHONE CO., Fairbank, Iowa, is rebuilding its system with 35-foot poles, newly paintel and cross-armed. The company now has over 100 miles of farm and toll lines, with 200 telephones.

A STRONG NEW NEBRASKA corporation is the Carroll Independent Telephone Co., Carroll, Neb., recently organized with a capital of $10,000. John Heron is president and Jas. Johnson fills the positions of secretary and manager.

THE BADGER TELEPHONE CO., Oconomowoc, Wis., has just extended its lines to Toland and is considering direct toll line connections with the exchanges at North Lake and Merton. Next spring the lines will be extended to Ashippun.

THE LINCOLN TELEPHONE CO., Lincoln, Neb., has made an increase in rates from $1.75 to $2 per month for residence 'phones and from $3 to $4 for business 'phones. The company has also introduced two-party lines at $1.50 for residence and $3 for business use.

THE PIERPONT TELEPHONE CO., Pierpont, S. D., has been incorporated, with a capital of $10,000, and the following officers: President, M. D. Johnson; secretary, E. E. Flint; general manager, N. S. Rafferson.

THE NORTHERN TELEPHONE CO., Baudette, Minn., which was established a few years ago by S. B. McNamara, now has toll and rural lines to many points in North Dakota and Minnesota, besides a prosperous local exchange.

A STRONG RURAL COMPANY has been organized by the farmers of Pleasant Springs township, Dane county, Wis. It is called the Kegonsa Independent Telephone Co., with headquarters at Stoughton. Clarence Jordalon is secretary and manager.

UINTA COUNTY, WYO., has a new telephone organization, called the Jackson Valley Telephone Co., which was recently organized at Jackson, with a capital of $5,000, for the purpose of building new lines in Jackson Valley and surrounding country.

THE ELGIN TELEPHONE CO., Elgin, Minn., has been absorbed by the Greenwood Prairie Telephone Co., Plainview, Minn., which now has exchanges at Plainview, Elgin, Millville, Kellogg and Wabasha, with a total of 1,000 telephones. Andrew French is manager of the system.

FRANK McNALLY, formerly manager of the equipment department of the Washington Telephone Co., Washington, Iowa, has become manager of the Carroll County Telephone Co., Carroll, Iowa. He is succeeded at Washington by Ray V. Hatfield, of Macksville, Kas.

THE KEARNEY TELEPHONE CO., Kearney, Neb., has just built its share of a copper toll line which will connect its system with Lincoln, South Omaha, Kansas City and St. Louis, Mo., and Council Bluffs, Iowa. During the past summer the company strung 45 miles of copper west and northwest to branch exchanges at Overton and Sumner, and besides that

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has an iron metallic circuit from Overton to Lexington, 11 miles, and from Sumner to Callaway, 40 miles.

IN THE DISTRICT COURT of Platts county, Neb., Miss Ella E. Lawrence has started suit against the Monroe Independent Telephone Co. for $20,000 damages. The plaintiff was employed in the telephone office and received a shock of electricity in July, 1904, and another in May, 1905. The shocks, it is alleged, knocked her down, paralyzed her arm and incapacitated her for business.

AN ENJOYABLE MEETING of the Southeastern Iowa Independent Telephone Association was held at Washington, Iowa, in November. The following officers were elected for the ensuing year: President, E. E. England, Mt. Pleasant; vice president, Fred Dupuis, Sigourney; second vice president, E. H. Silwell, Iowa City; third vice president, G. M. Heiserman, Albia; fourth vice president, F. H. McQuiston, Fairfield; fifth vice president, E. G. Fox, Washington. About 23,000 telephones were represented by the delegates to the convention.

PACIFIC COAST STATES.

A NEW TELEPHONE SYSTEM will soon be installed at Glendale, Ore., by Dr. A. F. Sather and others.

A NUMBER OF RURAL LINES is being constructed at the present time in the vicinity of Grass Valley, Cal.

THE HOME TELEPHONE CO., Berkeley, Cal., has been granted a 35-year franchise by the local board of trustees.

A FIFTY YEAR FRANCHISE has been granted to the Southwestern Home Telephone Co. by the board of trustees of Elsinore, Cal.

THE BOARD OF ALDERMEN of Hoquiam, Wash., has granted a telephone franchise to Edward C. Finch over the veto of the mayor.

THE TOWN OF WILSON CREEK, Wash., will be the hub of a wide system of rural telephone lines. Thirty-five miles are already in operation and 70 more will be added this winter.

THE HOME TELEPHONE CO., Los Angeles, Cal., is erecting a new suburban exchange building on West Adams street at a cost of $24,528, exclusive of heating, plumbing and electric work.

THE U. S. GOVERNMENT is constructing a fire alarm telephone system from one end of the Trinity Center (Cal.) reserve to the other. Rangers connected with the forestry service were employed to do the construction work.

THE HOME TELEPHONE CO., Colusa, Cal., recently organized by local capitalists, will begin construction work at once. The company has secured franchises in Glenn and Colusa counties and is now trying to get one in Sutter county.

A. K. DETWILER, who holds an Independent franchise for a telephone system at San Francisco, denies reports circulated by Bell emissaries that his enterprise could not be floated for lack of capital. He states that he has all the money needed to carry on construction work.

Cheerfulness in the Work Room

The quality of cheerfulness has so direct a connection with the attainment of happiness and contentment during our mundane pilgrimage, and provides such an excellent antidote to most of life's little worries, that it is perhaps worth while considering what beneficial effects may attend the wider application of this pleasant characteristic—to things commercial as well as social.

The above statement, which is made in the National Telephone Journal by T. J. Clark, chief clerk of the Manchester (England) exchange, cannot be asssailed, nor can other statements along the same line offered by the same writer, of which we reproduce the following:

Cheerfulness is essentially a practical virtue, and in the equipment of a successful man or woman brightness and cheerfulness will frequently be found factors of supreme importance.

Now in the minds of many people "telephones" and "irritation" are terms more or less synonymous; it therefore naturally follows that in the telephone service there is a rich field wherein to cultivate and practice our chosen virtue.

For a long time past the qualifications governing the selection of operators have included special reference to the importance of possessing a pleasant inflection of voice, and since pleasantness and cheerfulness may be described as twin sisters, hardly distinguishable apart, it will, perhaps, be conceded that the subjects of telephones and cheerfulness are not so remote as might have seemed at the outset.

If, therefore, official recognition has already been bestowed upon the importance of promoting pleasant relations between the staff and the public, it must surely be admitted that at least equal importance should be attached to the necessity of establishing the bond of good fellowship among the members of the staff themselves.

It needs no labored argument to prove that the best results can only be achieved in those cases where the different departments, together with the individual units forming each department, all work loyally and harmoniously together in the best sense of comradeship, recognizing that they all unite to serve one common interest, and that the success of the final result must in some degree be shared by those who have conscientiously worked to secure the success.

Internal administration, to be thoroughly successful, must therefore rest on a foundation of good organization combined with cordial staff relations, and, in regard to the last named, one of the highest essentials is the spirit of cheerfulness allied with efficiency.

Internal friction in departmental working must necessarily lead to diverted energy and consequent loss of efficiency, thus exhibiting the natural consequences attending the misuse or misdirection of our industrial forces. In such case the interests of the employer must inevitably suffer and the employes be similarly affected.

I therefore lay special stress upon the importance of cultivating the cheerful temperament. Under its gracious influence the phantoms of imaginary grievances cease to worry; life is far pleasanter and better worth living by not seeking to meet trouble halfway; while the way is still left open for the discussion of any real grievance, and with the promise of results more mutually acceptable by reason of a mental atmosphere of more kindly toleration all round.

It is, of course, to be remembered that the claims made for the desirability of promoting and cultivating the spirit of cheerfulness and pleasantness apply to all sections of the staff, to heads of staff and departmental chiefs as well as subordinates.

Like the gentle claims of courtesy, it extends to all alike, and I venture to predict that if the proportion of cheerful workers can be augmented both the individual and the community will benefit, while the combined results must irrestibly make for the cause of progress and efficiency.

THE CLARK ENGINEERING CO., Detroit, Mich., has been re-incorporated under the name of Clark Wireless Telephone Co., with a capital of $300,000. The new charter permits the operation as well as construction of lines.

THE AFFAIRS OF the Standard Telephone & Electric Co., Milwaukee, Wis., which was forced into involuntary bankruptcy last month, are being wound up by the receiver appointed by the court.

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BULLETIN NO. 3.

PROVINCE OF MANITOBA TELEPHONE NOTES AND COMMENTS

Persons interested in the Telephone situation in the Province of Manitoba should address MR. F. DAGGER, Provincial Telephone Expert, Parliament Building, Winnipeg, Man.

Subscriptions and advertisements should be sent to SOUND WAVES, 860 Monadnock Bldg., Chicago, Ill.

SOME TELEPHONE FACTS

The Citizens Telephone company of Grand Rapids, Mich., operates 85 exchanges with 23,644 telephones, and 3,356 miles of long distance toll lines, with 156 public toll stations. According to the annual report of this company, which has just been issued, the total capital expenditure, in which is included the cost of the toll lines, averages $98.33 per telephone. The gross earnings are $21.00 per telephone, and the expenses of operation, maintenance, etc., $13.95 per telephone.

These results are in striking contrast to the figures of the Bell Telephone company of Canada, presented at the Dominion telephone enquiry, which showed an average capital expenditure per telephone of $159; a gross revenue, less miscellaneous receipts, of $41.67 per telephone, and an expenditure, less bond interest and dividends, of $32.22 per telephone.

If any evidence were required in support of the contention that the people of this province can obtain a much cheaper telephone service from a system owned and operated at cost by the people, having only to earn a net revenue of 4 per cent., such evidence is amply supplied by the figures of the Michigan company to which we have referred.

We do not propose to offer any opinion in explanation of the high figures of the Bell Telephone company of Canada, but we cannot overlook the fact that while this company has certain relations with the American Telephone and Telegraph company, the parent Bell organization of the United States; the capital of the Citizens Telephone company represents dollar for dollar the actual cost of construction, and that out of 1,550 stockholders 1,300 are residents of Grand Rapids.

A dividend of 8 per cent. per annum has been paid on the stock of that company since its inception in 1896.

The annual rates charged are: In Grand Rapids with 7,900 telephones, $36 for business, $24 for residents; in towns having between 400 and 800 telephones, $24 for business, $18 for residents; in exchanges having from 200 to 400 telephones, $24 for business, $12 for residents; in smaller exchanges $18 for business, $12 for residents. The rates for farmers' telephones are $12 to $15 per annum. Where farmers own their own telephone system connection with the company's exchanges can be obtained for $3 per telephone per annum. In Jackson, Mich., this payment of $3 per annum gives the farmers service with nearly 3,000 subscribers.

The following statistics showing the population and number of telephones in the company's ten largest exchanges affords striking proof of the extent to which the telephone is appreciated wherever service is provided at a reasonable cost:

	Inhabitants	Telephones
Grand Rapids	87,565	7,900
Lansing	16,485	1,877
Traverse City	9,407	1,499
Holland	7,790	853
Cadillac	5,997	1,011
Ionia	5,209	684
Greenville	3,381	602
Hastings	3,172	559
Allegan	2,267	541
Portland	1,874	592

What can be done in Michigan by a company paying 8 per cent. per annum interest on its capital can be accomplished to greater advantage by the municipalities in Manitoba, where by the assistance of the provincial government capital can be obtained at 4 per cent. per annum.

When the time comes for the people to decide this question for themselves, in the face of facts like these, we do not think they will permit either the political forebodings of the Free Press or the sentimental pleadings of the Bell Telephone company to stand in the way of their securing the telephonic privileges which have for so long been withheld from them.

HOW MONOPOLY WORKS NEWSPAPERS

F. H. Dagger, provincial telephone expert, speaking to a Winnipeg Telegram reporter, referred to the request that he should name the newspapers that publish Bell telephone literature as reading matter.

"It is a matter of indifference to me," he said, "what newspapers the Bell Telephone company is in a position to control for the protection of its interests. As I have already stated, the public should know that articles supporting Bell Telephone interests do appear from time to time as pure reading matter, when they are nothing more or less than paid advertisements.

"It was proved by sworn evidence at the telephone inquiry in Ottawa that information furnished by the Bell Telephone company and paid for at advertisement rates was published as pure reading, and it is a matter of common knowledge that this practice is not confined to the Bell Telephone company.

"It is obvious that this practice is a purely business arrangement or contract between the newspaper and the advertiser, and it is not for the public good that such a state of affairs should exist.

"I would refer you to an article which appeared in the Neepawa Register of September 13, which contains what purports to be extracts from certain clauses in the Bell Telephone company's advertising contract, and also reprints an article on the same subject from the Toronto News.

"I would suggest that newspapers desiring to free themselves from suspicion in this campaign should adopt the practice of certain newspapers in Ontario by refusing to insert Bell copy, paid for as advertisements, unless the letters "Advt." appear at the end of such copy, thereby indicating its true nature.

"The people will be enlightened more fully upon this subject before the date of the next municipal elections. In the meantime I am content to accept the public verdict as to the veracity of any statements which I may make."

THE WEST WANTS TELEPHONES

The Alberta government is resolved to keep pace with the growing sentiment of the west in favor of greater telephone facilities. Like Manitoba, the government has secured the services of an expert and promises to assist in every way the development of a great rural telephone system owned by the municipalities and the province.

British Columbia leads the whole country in the expansion of the idea of public ownership of this necessary utility and can be relied upon to assist substantially the movement for cheaper 'phones and the more extensive development of the rural lines. The government of British Columbia owns outright several hundred miles of excellent wires, and connections are made direct with the city exchanges, where the civic government own them, but naturally the Bell company does not look with favor upon this interference with its ancient privileges.

The telephone monopoly is threatened seriously by the Independent methods introduced in the west. The activity of the Bell company today is regarded as the last protest of the men in control of the huge monopoly. The west has been neglected too long to be lulled into fancied security by this eleventh-hour plan of private ownership to improve the facilities. Had anything like reasonable expedition been displayed by the Bell concern in the western field the sentiment for public ownership might have been delayed for another generation.

The indifference of the monopoly has crystalized the feeling in favor of public ownership of telephone lines in the west until today Manitoba, Alberta and British Columbia are committed to the idea, and even the Scott government in Saskatchewan is threatening to do something in this direction.

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Story of the 'Phone in Glasgow

(From the London Times.)

Today the postmaster-general undertakes the telephone service of Glasgow and the surrounding district, and for that purpose assumes possession of the exchange and plant which the corporation of the city established five years ago. The postoffice thus becomes responsible for a second large exchange system, and takes a definite step towards the establishment of that complete public service which will obtain throughout the United Kingdom on the expiration of the National Telephone company's license at the end of 1911. Hitherto, as everyone knows, exchange systems have been for the most part in the hands of a private company and a handful of municipalities, while the trunk telephone system only has been conducted by the postoffice.

The notable exception is that of London, where the postmaster-general and the National company work exchanges side by side, and where the adherents of the postoffice system numbered about 32,000 at the end of last year. There are in the provinces a number of small postoffice exchanges serving groups of villages and towns of secondary importance; these show in all about 8,500 subscribers. The subscribers to the Glasgow system exceed this number, reaching about 12,000. In other words, the postmaster-general by entering upon the service of Glasgow more than doubles the number of persons outside London who depend directly upon the postoffice for their telephonic communication with their neighbors. When it is remembered that more than 90 per cent. of all telephone conversations are local, the effect of each considerable extension of exchange business in bringing the postoffice into direct relation with the public will be appreciated.

HISTORY IS EVENTFUL.

The municipal telephone has had a short life in Glasgow, but its history has been eventful and its influence on telephone administration of great value. Glasgow has given expression to the strong protest of the municipalities of the country against telephone monopoly in the hands of a private company. The failure of effective competition with the National company on the part of private enterprise, and the arrangements made between the postmaster-general and the company in the early nineties (which were thought to recognize the company's exceptional position) alarmed local authorities, anxious to obtain a cheap and efficient telephone for their citizens. Glasgow put itself at the head of the demand for some check upon the company. It urged that the postmaster-general should take the whole telephone service into his hands, or, failing this, should allow municipalities to supply such a service; it petitioned for a license and undertook to establish an exchange system at the risk of the rates. The postoffice resisted this demand, and debates and parliamentary inquiries went on for years. There was much to be said on both sides. The best results cannot be obtained from unrestricted competition in the supply of telephones.

All persons in a town who use the telephone should be able to speak to each other, and this is impossible where there are two exchange systems in bitter rivalry. One system efficiently conducted, at rates as low as are consistent with the avoidance of a loss, is the ideal; and this was in substance the reply of the postoffice to the municipalities. But there was a weak point in the argument. The postmaster-general had no power to compel the company to give either a good or cheap service; and in practice, except in so far as municipalities could exact terms for the use of their streets, the public were at the mercy of the company. An official inquiry which took place in Glasgow showed that the service actually given by the company was very far from ideal, being both dear and bad; and more general investigation seemed to show that, despite the obvious evils of competition, the mere threat of a rival had in more than one instance produced cheap rates. At length the government, under the guidance of the late Mr. Hanbury, gave way. A policy of competition was announced; the postmaster-general established an exchange in London; an act authorizing municipalities to spend their rates in telephone undertakings was passed; and in 1900 a license to work telephones was granted to the corporation of Glasgow.

WORK WAS VIGOROUS.

The corporation and its officials set to work with their wonted vigour. In June, 1901, they opened exchanges, which speedily obtained a large clientele. The effect on the rates charged to Glasgow citizens was immediate and striking. The company, when without a competitor, had but one rate, that for an unlimited service; and this ranged from £10 to £25. The corporation gave a similar service for £5 5s., as well as what is known as a toll-rate, made up of a dead-rent of £3 10s. and a tax of 1d. for every conversation originating with the subscriber. The telephone company could not reduce its unlimited message rate below £10, because in order to obtain facilities for the construction of its lines it had given a "favored-nation" clause to many other municipalities, and it was prepared to concede a lower rate than £10 elsewhere in the large towns of the kingdom. The toll-rate of the corporation it adopted; but it did more. It instituted very low rates for a fixed, but large, number of conversations—e. g., £5 for 600 originating conversations, and £1 for every additional 300 up to £9 for 1,800, with a yet cheaper rate for private houses. As a yearly rate of 600 conversations represents nearly two for every working day in the year, and one of 1,800 nearly six, and as no account is taken of conversations originating with other subscribers, it will be seen that these rates go some way toward meeting the low rate of the corporation for unlimited service. This, however, was not enough. The company introduced from America a new species of service when two or more subscribers are served by the same line. There are disadvantages in this service. If the two subscribers wish to use the line at the same time, one must give way; and one subscriber can overhear the conversations of the other.

But there is much use of the telephone with which these drawbacks do not seriously interfere; and a charge of 25s. for 600 originating conversations even on a line which may eventually be used by twenty subscribers is tempting to many. Four guineas (the corporation charge) and £6 (the company's charge), for an unlimited number of messages on a line used by two subscribers also represent a large reduction on the minimum of £10 which obtained before the corporation entered the field. At the same time, the service was greatly improved in efficiency. Some of the improvements and some of the new modes of charge might, no doubt, have been introduced by the company in the ordinary course to attract business; but the fact remains that the citizens of Glasgow have benefited largely both in efficiency of service and in moderation of rates, since their corporation established an exchange in competition with that of the company.

RESULT OF THE CAMPAIGN.

The indirect results of the spirited action of the corporation have been yet more important. It is a curious fact that Glasgow has been left almost alone in telephone enterprise. Many municipalities talked of embarking in telephone business; but in the result, only half-a-dozen accepted a license from the postoffice, and of these one very shortly sold its business to its competitor, the company. The other four have not among them two-thirds of the subscribers enrolled by Glasgow.

Competition has therefore been represented substantially by Glasgow and by the postoffice in London; and competition and the fear of competition have, it cannot be doubted, played an important part in inducing the company to sumbit to the regulation of its charges, first in London, and afterwards throughout the country, to enter into obligations respecting the efficiency of its service, and finally to agree to the ultimate sale of its plant to the postoffice on reasonable terms. The Glasgow competition, sufficiently successful for the time, whatever might have been the ultimate result, was a fact which the company would not ignore, and which has undoubtedly had its influence upon the behavior of the company. A few years ago the company had a free hand throughout the towns and populous districts of the country. It could charge what it liked, it could give what service it liked, and it could pick and choose the persons with whom it would deal. At the present day there are large parts of the country which it cannot enter without the consent of the postmaster-general; it is bound to treat every one alike; it is bound to give good service; it cannot charge more than certain maximum rates; and it is bound wherever the postoffice established an exchange, to give intercommunication between the postoffice subscribers and its own subscribers in the same town.

Moreover, by agreeing to the sale of its plant at the end of 1911, it has delivered the postoffice from the serious dilemma of having either to duplicate telephone plants throughout the

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urban districts of the country (with all the consequent waste of capital, disturbance of streets, and interference with traffic), or to run the risk of dislocation of the telephone service upon the company's retirement from the field. That the company have also had regard to their own interests in the course they have taken is proved by the large increase in their business and by the price of their shares. But a great private trading concern does not always consult the interests of the public, even when its own interests would gain by so doing; it may think to earn a higher profit by an arbitrary mode of dealing and a narrow policy. That the country has benefited largely by the more enlightened telephone policy of the last few years cannot be gainsaid, and in bringing about this policy Glasgow has played no inconspicuous part.

SUCCESS OF THE ACTION.

The very success which has attended its action is a sufficient reason why the corporation should now retire from telephone business, even though it might have maintained it system for another seven years. The license granted to the corporation expires at the end of the year 1913; but it has agreed to surrender its license at once and to sell its plant to the postmaster-general. This is an almost inevitable result of the agreement with the National Telephone company which was approved by the house of commons last year. So long as the future of the telephone was undetermined, so long as the means by which the postoffice would carry on the future telephone business of the country were in doubt, so long as the company was under no sufficient restraint, and so long as it was barely possible that under the difficulties surrounding the subject, the license of the company might be renewed, there was every reason for the vigilant prosecution of the undertaking of the company.

But, when once the company had come under suitable regulations, and arrangements had been made for the conduct of exchange business throughout the country in 1912, the continued existence of the exchange of the corporation became unnecessary. No object was to be achieved which had not been already secured, and there was no sufficient reason for risking the revenues of the corporation in a competition with a trading company, and in the supply of a commodity which, though of the first importance to a mercantile community, is not, like gas, water, or even tramways, of general use throughout all classes. It became only a question of the terms upon which the postmaster-general could relieve the corporation from a thankless task; and it is satisfactory to know that Mr. Sydney Buxton and the chancellor of the exchequer have been able to make arrangements satisfactory to the corporation. The telephone service of Glasgow will now be conducted as in London, by the postoffice and the National Telephone company, and it may be anticipated that friendly co-operation similar to that obtained in London, with all the resulting advantages, will be substituted for the fierce rivalry which almost necessarily existed between the company and the corporation.

MANITOBA IS ACTIVE

We, in Ontario, sometimes pride ourselves on being the leaders in progress and reforms in this country. Ontario people have been talking for some time about government ownership of public utilities, but, while we have been talking, Manitoba is acting, notably in the matter of government control of the telephone service. Mr. F. Dagger, a telephone expert, with twenty-five years' experience, has been retained by the Manitoba government in an advisory capacity, and to put into effect the policy of government ownership.

Mr. Dagger has stated that "with few exceptions, there is no reason why every farmer in Manitoba should not have a telephone for one dollar a month, but no company looking for large dividends and an enormous surplus would furnish these at that figure, therefore, it is in the people's interest to support the government's policy."

What is applicable or practicable in this regard in Manitoba should be applicable and practicable in Ontario, and there is not the least reason why every farmer in Ontario should not also have his 'phone at a cost of one dollar a month. We cannot do better than follow the lead set us by Manitoba in this matter. The thing to do is for Ontario to engage the service of an expert like Mr. Dagger, and to do it now. This is either a good thing to do or it is not. It is either in the interests of the people or it is not, and no sane man will say it is not in the interest of the people. If it is a good thing to do in the interest of the people, why postpone doing it?

Premier Whitney could not pursue a wiser course in this matter, nor do the public, who have suffered long at the hands of the Bell Telephone monopoly, a better turn than to take a plebiscite on this question of provincial and municipal ownership and control of lines in Ontario. The time is ripe for action. Everything is to be gained and nothing lost by this course. Strike while the iron of public sentiment is hot.

While on this subject of government ownership of telephones, it might be in order to ask where are the Liberal journals that have been making such a howl about government ownership of public utilities? Now is the time for them to talk out loud. Perhaps theirs was only an academic campaign; but if they mean what they have been saying, now is the time for them to urge such a campaign as we have suggested upon the Ontario government.—Alexandria Glengarian.

Bell Beaten by Farmers

Alpheus Hoover, president of the Canadian Independent Telephone Association, whose home is at Green River, Ont., was in Winnipeg during the recent telephone campaign and told a reporter some interesting facts about his fight against the Bell monopoly.

Mr. Hoover has conducted a large mill at Green River for many years. Because of the utter inadequacy of the Bell service over that rich section of Ontario, Mr. Hoover co-operated with the farmers from whom he bought grain and organized a little country company which ultimately constructed a small line from Locust Hill over to Markham with probably a dozen subscribers. It was purely for the convenience of the farmers and small crossroads merchants who freighted their goods from Locust Hill. The Bell company looked complacently upon the move, for they had refused to construct the line, claiming that the country did not require the service.

The climax came when the little farmers company was ready to connect with the station at Locust Hill. They had gone to considerable expense. The agent invited the workmen representing the farmers to put the connection into the depot. The next day he was peremptorily ordered to take it out. The order came from the headquarters of the railroad company at Montreal. Delegations appealed to the C. P. R. and to the Bell company, but got no satisfaction.

Then the newspapers began to investigate and the famous contract between the Bell company and the C. P. R. was revealed by which the C. P. R. agreed to give the Bell company the exclusive right to put its wires into their stations.

Litigation followed and the Bell company was indicted for conspiracy to restrain trade and subpoenas were issued for President Sise of the Bell company and Sir Thomas Shaughnessy. Both were represented at the trial by two justices on the trial for conspiracy. The justices disagreed. Then an indictment was found against the Bell company by the grand jury, but there was no prosecution.

The net result of the agitation was the utter rout of the Bell company in that part of Canada. They resorted to every device to coerce the farmers and force them to repudiate their rural company. Today the company serves a district composed of some fifteen thousand people, rates have been enormously reduced and the people served in the co-operative company receive all profits from the business. The case supplies today much of the ammunition used against the Bell monopoly in other parts of Canada, because the shameful facts revealed in the methods of the company to stifle competition.

"Our rural company is very prosperous," said Mr. Hoover to a reporter. "The Bell company has reduced its rates on local and through service as a result of our agitation, but the farmers company thrives. We serve a constituency of fifteen thousand people and are quite prosperous. Even to Toronto, from Green River, where the Bell used to charge before this contest, twenty-five cents for a three minute talk, they have reduced the price to fifteen cents. Their rural 'phones have been cut in price and the service improved, but the rural Independent 'phones continue to thrive in all parts of Ontario, threatening the life of the monopoly that has so long prevented co-operation in public telephones in Ontario. I am here to tell the people some of our experiences with the Bell monopoly in this case."

THE RESULT OF THE ELECTION in Manitoba is a great victory for Premier Roblin, Attorney General Campbell and Telephone Expert Francis Dagger. In our next issue we will give a complete analysis of the vote.

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The Issue Made Perfectly Clear

The Assiniboine municipal council at St. Charles was addressed by F. Dagger, provincial telephone expert, a few weeks ago. The legislation of the provincial government in regard to public ownership of the telephone service was the theme of discussion. Mr. Dagger was present by special invitation.

Reeve G. G. Caron presided and all the councilors were present. After listening to Mr. Dagger's address a general discussion followed in which all the councilors expressed themselves as being in favor of the government's policy, Reeve Caron stating that he was sure that his municipality would record a solid vote in support of the government's proposals. Several councilors expressed themselves very strongly in regard to the Bell Telephone Company, and particularly in regard to that corporation's action in demanding a guarantee of twelve people at $50 per annum for a party line connection with the Winnipeg exchange, eight miles distant. They stated that at the rates possible under municipal ownership every farmer would have a telephone if they could speak to Winnipeg without a toll charge, which Mr. Dagger told them was quite practicable.

In the course of his remarks Mr. Dagger said:

I now turn to the provincial legislation, and I would here say that, if, in the consideration of this legislation, it is considered by any person or municipality that the government has not fully provided for the effecttive carrying out of the policy of municipal ownership of telephone system in such manner as any person or municipality deems in the best interests of the people, the government is only too ready to make such amendments or additions to such legislation as will adequately meet the wishes of the municipalities and the people to the fullest extent. In this matter of telephone policy the government places itself absolutely in the hands of the municipalities and the people to do just what the people wish.

PLANS OF THE GOVERNMENT.

Briefly, the government proposes to construct a complete provincial long distance telephone system radiating from Winnipeg, and, if requested by the municipal councils so to do, to build local exchanges in Winnipeg, Brandon and Portage la Prairie. It is obvious that it would be useless for the government to expend money in doing this work, unless it was first satisfied that the smaller municipalities were prepared to co-operate with the government by building and operating local exchanges with which such long distance lines and larger exchanges would connect. Therefore they ask the municipalities at the next elections to place before their electors the simple question: "Should this municipality own and operate its own telephones?"

If the majority of the people say "No," well and good. If the answer is in the affirmative, then there the government would proceed to build these long distance lines, and will render all the assistance that is necessary to enable each municipality to construct and operate its local telephone exchange. They will go further. Providing the government is satisfied that sufficient subscribers are forthcoming to ensure the financial success of a municipal telephone exchange, it will guarantee payment of the principal and interest of any debentures issued by such municipality for that purpose, thereby enabling a municipality to borrow money at a rate not exceeding 4 per cent. interest per annum.

PEOPLE WILL BE THE JUDGES.

An answer in the affirmative will not mean that each and every municipality is compelled to establish a municipal telephone exchange; that is a matter which is left entirely in the hands of each municipality to do in accordance with the wishes of the people residing in that district, and each municipality is free to choose its own course. The chief policy of the government will be to see that no municipality involves the ratepayers or the province in a financial loss by entering into the telephone business.

It may be that there are municipalities which at this date are not sufficiently developed to justify a municipality in providing a service at rates which the people can afford to pay. In these cases it will no doubt be possible to establish toll stations in the villages connected with the long distance system, and it may be that private or co-operative interests will establish farmers' system connecting with such toll stations until such time as such municipality is sufficiently developed to justify the establishment of municipal systems.

The whole aim and object of this legislation is to enable the people to obtain a telephone service at cost, instead of providing enormous profits for the Bell Telephone Company.

As I have not had an opportunity yet of going over the ground, and studying thoroughly the conditions of each municipality, I am not in a position to give definite figures on this, but this much I will say, that any farmer who can be provided with a telephone at a capital expenditure not exceeding $100 should be provided with that telephone at a rental of $1 per month, and it is further possible to give telephone service to the residents of the towns and cities at the same rate.

I am aware that the Bell officials will say that this is an impossibility, but I would remind you that in addition to the operating expenses per subscriber, which, compared with results in the United States, is $15 per annum higher than it should be, that corporation is earning a profit of $9.50 per annum on each $100 expended, and further had at the beginning of last year a reserve fund of over $33 per telephone. Further than this, I have a list here of about fifty places in the United States where companies are providing telephone service to farmers and residents at $1 per month.

In regard to long distance service, I would remind you that you are paying in Manitoba, with one or two exceptions, the highest rates in the world, and that with the exception of this Dominion and the United States, almost every civilized country in the world owns and operates its own long distance lines.

In Great Britain, the rates for three minutes conversation for long distance service is about ¼c per mile; in Germany ⅛c per mile, while in some other countries it is even lower than this.

I am satisfied that the provincial government is perfectly safe in establishing long distance service at the rate not exceeding ¼c per mile. II further believe that the financial result of this rate will be such as to justify the adoption of an even lower tariff than this. In justification of this statement I may say that in Sweden you can speak 62 miles for 4c; 155 miles for 80c, in Germany 31 miles for 6c, 310 miles for 25c, in France 15 miles for 5c, 46 miles for 8c, 93 miles for 10c, and 186 miles for 19c.

If they can do this thing in Europe there is no reason why, when this province is fully developed, you may not obtain a service at rates little in excess of these figures, but such conditions will never be reached while your long distance lines are in the hands of a private company. Now, therefore, before the province is fully developed, and before the Bell Telephone Company is permitted to obtain a stronger hold upon the telephone business here, is the time for the people to take action, and do for themselves that which no private corporation ever will do. The provincial government by its legislation last session has made it possible for you to do these things and I am here for the purpose of giving you any information or assistance, with a view to enable you to fully understand this question, and to give you every assistance in my power which will help you to formulate a plan whereby you can provide your own telephone service should you desire to do so.

POLICY OF ALBERTA LIBERALS

John T. Moore, the well known member for Red Deer in the provincial legislature of Alberta, in an interview gave as his impressions of the new government system of telephones, now under construction in Alberta.

Nothing, said Mr. Moore, out of all the mass of work done by the Alberta legislature during the first session ranked as of more importance than the measures taken to provide for a system of government-owned telephones. Personally he was of the opinion that this was one of the most important subjects that the new government was called upon to handle and he thought that it was up to them to see that a complete system of government telephones was constructed throughout both provinces. In the matter of 'phones this country was at present behind the States and we should not be satisfied until it was possible for every farmer to have a telephone in his house if he so desired. The Alberta government had already taken a long stride in that direction by the voting last session of a large sum for the construction of trunk lines. Their policy in that province was to erect a system of trunk lines throughout the country, leaving it to the municipalities to arrange for the local exchanges.

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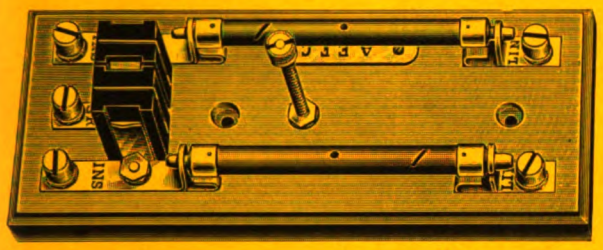

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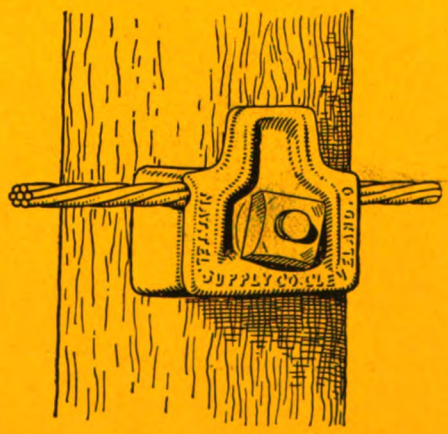

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New Advertisements can be inserted if received by the 5th of each month but to insure proper classification they should be in this office by the 1st.

To mail the paper promptly, it is necessary for us to adhere strictly to the above, and we will appreciate the co-operation of advertisers.

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EDITORIAL COMMENT

NO OPTION ON SOUND WAVES

Fearing that some well-intentioned gentlemen connected with the manufacture of Independent telephone supplies might, perhaps, be misled by the alleged claims of a certain peripatetic monger of telephone "news," SOUND WAVES desires to announce publicly that neither the said party, nor any other individual or firm, has an "option" on its plant and good will. Any statement to the contrary is a lie, pure and simple.

Attractive overtures were made to the proprietors of SOUND WAVES last November, and the party making them—at that time unknown to the gentlemen interested—did secure a tentative option until November 20, 1906. A request for a renewal of said option, upon its expiration, was rejected promptly and unequivocally.

SOUND WAVES is neither directly nor indirectly connected with any of the publishing or stock-jobbing schemes which have been, and are being, hawked about the country for the pecuniary advancement and advantage of certain individuals, with histories of a more or less equivocal character.

The management hopes that none of the business men approached have invested any money in the schemes based upon the alleged option on SOUND WAVES, which option, ever since November 20, 1906, has existed only in the fertile brain of an enterprising promoter of an impossible weekly telephone publication.

PROSPECTS THAT ARE PLEASING

That the year 1907 will be a record-breaking one in the Independent telephone field does not admit of doubt.

Hundreds of millions have been paid out during the past month in dividends. Railroad and industrial stocks, which in the past paid no dividends, or, at best, very small ones, earned fair returns in 1906.

The vast amount put in circulation by these dividend payments is seeking profitable re-investment; and many millions will, no doubt, be employed in telephone construction or in the purchase of telephone bonds and securities.

Most of the larger Independent systems have enjoyed a year of unbroken prosperity. Interest on bonds has been paid promptly and the stockholders have had no

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reason for complaint—happy results due to careful management and the general prosperity of the country.

No other great industry in the United States is less contaminated by the virus of unwholesome speculation than the Independent telephone business. As a rule, every bond represents property worth much more than 100 cents on the dollar, and of constantly increasing value.

Trust companies which, a few years ago, hesitated to invest in Independent telephone bonds now purchase them freely and consider them first-class permanent securities.

No wonder, therefore, that the country is on the eve of a great revival in telephone construction.

The indisputable fact that Independent telephone plants have equipment far superior to that used by the Bell exchanges nd the further fact that profits earned by local companies are kept at home instead of being transferred to Boston have given an impetus to the Independent movement which nothing short of a national panic can stop.

The manufacturers of construction material and dependable apparatus can look forward to an increasing business. Some factories are already crowded to their utmost capacity; one or two others have advance orders which will keep them busy for a year or more, and all the others are making careful arrangements so as not to be swamped by the big spring orders which are coming in from all parts of the country.

Managers of companies who are in need of new equipment and the officers of the hundreds of new companies, which are being organized everywhere, should not delay in placing their orders, as otherwise they will be disappointed very likely in receiving their goods.

Leaders of business and finance, with the exception of John D. Rockefeller, are unanimous in predicting a year of boundless prosperity, and no class of men, it seems at the present writing, will be benefited more by it than that which operates the country's telephone systems, as well as that which manufactures and sells the material and apparatus necessary to build and construct them.

THE BELL'S LATEST GAME

The time when Independent telephone companies had to kneel before the big and little thrones of the big and little Bell tyrants has gone by, and will never return.

Independent telephony today is a power without a superior. With the exception of a few large cities and thinly-settled portions of the country it may be said to control the telephone field.

Independent telephone properties have been built up without the direct or indirect assistance of the Bell monopoly. Rather, they have flourished in spite of the attacks of the Bostonian head of the American T. & T. Co., to whom a prosperous Independent system is what a red rag is to a bull.

Within the past year the American T. & T. Co., which formerly refused exchange service to Independent companies, has had a change of heart, and now is seeking the aid of the democratic party in Texas—and of political influences elsewhere—to secure the passage of laws compelling all telephone companies, whether Bell or Independent, to connect with each other.

This reversion of the monopoly's ancient policy is due to the fact that several of the great Bell auxiliaries see the handwriting on the wall. They know that the days of their iniquity are numbered and that the only chance of salvation lies in manipulating state legislatures so that the Independents may be forced to render service which they themselves refused in a high-handed manner but a few short years ago.

The Bell managers are smart enough to realize that forced connection, such as they are working for, would put an end to all competition and make the telephone business what they always claimed it to be—a natural monopoly.

Compulsory exchange laws would give the trump cards to the Bell company at the present stage of the game, because it has a more cohesive, consequently a more effective, organization than the Independents, whose financial as well as operating interests are not yet centralized or governed by one man or even one set of men.

The future development of the telephone business rests, as did the genesis of the Independent movement, on competition. With it out of the way the Bell monopoly, although numerically weaker and morally bankrupt, could and would control the situation.

The Independent telephone men of Canada, wider awake than some of their American colleagues, have steadfastly refused to sign toll contracts with their antagonist, although under the law of last year they could force the Bell company to transmit messages originating on Independent lines at the same rates as those charged to users of Bell 'phones.

Those intelligent Canadians know that the Bell crowd wants the business created by them which cannot be gotten except by means of toll contracts which take away incentive to enterprise and are calculated to make managers of local Independent systems mere employes of the monopoly.

It seems, for these and other reasons, exceedingly peculiar that an alleged Independent telephone paper, published in Chicago, should advocate the "Texas idea" of compulsory exchange of service, and it might be well for the officers of the Texas State Independent Telephone Association to institute a rigid inquiry into this betrayal of the most vital interests of its members.

In another part of this issue is printed an article written by Mr. C. K. Sweet, a citizen of Texas and a practical telephone man, which deals with the Texas sit-

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uation from an unprejudiced point of view and which corroborates in the main all that SOUND WAVES has said heretofore on compulsory telephone legislation.

WHERE SOUND WAVES STANDS

Instead of replying to several communications, recently received, SOUND WAVES desires to announce publicly that it will not undertake to recommend, editorially or otherwise, any particular telephone apparatus.

Persons who wish to buy such apparatus should communicate with the manufacturers whose business it is to descant upon the merits of their goods or who employ able men to perform this pleasing duty for them.

The management exercises extraordinary care in accepting advertisements, and the firms whose goods are offered to the telephone public through the pages of SOUND WAVES are dependable, progressive and reliable, in every sense of the word.

There may be other factories which make equally good apparatus; but, not having examined the merits of their product with the view of either endorsement or condemnation, such decision is left altogether to the prospective buyer.

Every article advertised in SOUND WAVES, in the judgment of the writer, is of excellent workmanship and scientific construction, and every advertiser is able, morally and financially, to carry out all the promises made in his announcements. Such being the case, this paper declines to favor any particular firm by recommending its particular product, except in a general way,

Unlike one of its valuable, and therefore presumably respectable, contemporaries in the telephone field, SOUND WAVES is not financially interested in any telephone manufacturing or telephone supply company. It can therefore tell the truth at all times, without injury to its purse or conscience, and without discriminating against any manufacturer or dealer.

Neither is SOUND WAVES owned, wholly or in part, by any telephone factory or supply house. It is an international telephone journal, without excrescences or caudal appendages—nothing more, nothing less.

It represents no interests except those of Independent telephony, seeks no patronage but that of makers of untainted apparatus and material, toadies to no cliques or factions, and tells the truth the year around.

All of its advertisers it can recommend to its readers, because if they were not reliable, honorable and trustworthy their announcements would not appear in SOUND WAVES.

EVERY BRAIN A TELEPHONE

In these days of fierce commercial and scientific competition it is well to give an occasional thought to the seemingly fanciful, but yet most valuable, theorems advanced by savants whose researches deal with the spiritual rather than the purely mental or material conditions by which the human family is surrounded and, in a large measure, dominated.

Dr. Baraduc, a physician of the highest standing in Paris and France, recently exhibited a series of photographic plates taken during last year's pilgrimage to Lourdes, the famous French grotto where, according to faithful believers, thousands of miraculous cures have been wrought.

All of these plates bore impressions resembling raindrops, although rain was not falling at the time of their exposure. Dr. Baraduc, who is not a religionist, explains that the force of prayerful thought, ascending from the spiritual part of 60,000 pilgrims, caused a rain of mercy to descend, which produced exactly the same impression on ten photographic plates inclosed in radiographic paper.

Exposures made in other places showed quite different impressions, vague and cloudy, from which Dr. Baraduc concluded that the vibrations of the thoughts of the multitude were not concentrated.

The practical value of the French savant's discovery may be doubted, but that he has demonstrated once more the truth that "thoughts are things" cannot be disputed.

Thought is a mysterious power which sends its influences far and near; nor are thoughts less material than the Hertzian waves which make wireless telegraphy and telephony possible.

It is the opinion of many conservative scholars that the time is not far distant when persons possessed of strong and pure intellect will be able to exercise the power of transmitting their thoughts to others similarly blessed across continent or ocean.

Then every cultured human brain will be a telephone, ready to receive and transmit messages. Certain it is, however, that before we attain such thought perfection we must divest ourselves of the grosser ambitions which now characterize our business and social relations.

But, even as a fancy, the hope that some time or other men and women will no longer be separated by conditions or distance is uplifting and should make us purer in thought and nobler in action.

THE VOTE IN MANITOBA

Premier Roblin, Attorney General Campbell and Telephone Expert Dagger have reason to be highly pleased with the vote of confidence wherewith their telephone proposition was honored by the voters of Manitoba.

Fifty-four municipalities voted by an overwhelming majority for the government proposition, 13 municipalities recorded a vote of 50 and 60 per cent in its favor, and 56 voted against it; leaving a majority of 11 municipalities in favor of the government.

The total vote in the province was, approximately, 24,400, the government plan receiving a clear majority of 3,770.

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In the 56 municipalities which voted against the legislation there were only nine, with 13 Bell exchanges and 498 telephones, as compared with the 36 Bell exchanges, with over 9,000 telephones, in those municipalities which voted for the government's telephone policy.

All of which goes to show that the people who were, even superficially, familiar with Bell methods of extortion availed themselves of the opportunity of protest by voting against the perpetuation of the Bell rule.

The government, so grandly endorsed by the people, will at once undertake the construction of long-distance lines in conformity with the plans discussed during the past three months in the Manitoba Bulletin of SOUND WAVES. Arrangements for the building of municipal lines will be perfected as quickly as the circumstances may permit.

While Mr. Dagger had the active support of the government and the assistance of such able coadjutors as Dr. J. T. Demers and Alpheus Hoover, of Canada, and J. B. Ware, C. B. Cheadle and other noted apostles of American Independent telephony, yet the laurel leaf of victory belongs to him.

Day and night—with true British tenacity and pluck—he worked to overthrow the Bell influence, refuted the lies of his opponents by arithmetical and scientific arguments, paying no attention whatever to the cowardly personal attacks made upon him by the hirelings of the monopoly.

All the world loves such a plucky fighter and able general, and SOUND WAVES takes great pleasure in congratulating Mr. Dagger upon the emancipation of Manitoba from telephone thralldom, brought about largely by his enthusiasm, knowledge and love of right.

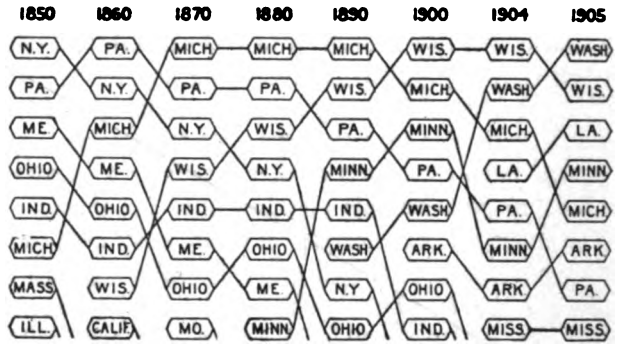
The part which SOUND WAVES took in the great fight has been appreciated by the liberty-loving people of Manitoba. It was the only telephone journal which was with the public during the days of uncertainty. Since the victory, however, the entire telephone press, God bless it, has seen fit to go into ecstacies over what it is pleased to call the "great Manitoba victory."

Lumber Production in 1905

The Forest Service of the U. S. Department of Agriculture has just issued a pamphlet on the lumber cut of the United States in 1905, prepared by S. R. Kellogg. From the report it appears that Washington leads with 3,917,166,000 feet, or 12.8 per cent of the total amount reported, followed by Wisconsin with 2,543,503,000 feet, or 8.3 per cent; next Louisiana, with 2,293,809,000 feet, or 7.5 per cent; then Minnesota, with 1,925,804,000 feet, or 6.3 per cent; and fifth Michigan, with 1,719,687,000 feet, or 5.6 per cent. From no other state does the amount reported exceed 5 per cent. of the total. The 11 states which reported a cut of over 1,000,000,000 feet each, produced two-thirds of the lumber reported for the entire United States.

It is interesting to note that the five leading states in the production of lumber in 1899 were Wisconsin, with 10 per cent of the total; Michigan, with 9.6 per cent; Minnesota, with 7.7 per cent; Pennsylvania, with 6.3 per cent; and Washington, with 5.3 per cent. During the past five years Washington has advanced from fifth to first place, a position it will assuredly hold for a long time.

The cut gives in order of rank the eight states which have led in lumber production since 1850. From this it



is seen New York occupied first place in 1850, Pennsylvania in 1860, Michigan in 1870, 1880, and 1890, Wisconsin in 1900 and 1904, and Washington in 1905. This chart is based upon census reports, except for 1905, for which Forest Service figures are based. Previous to 1900, data are lacking concerning the quantity of lumber cut in the various states, and the rank is based on value, while for 1900, 1904, and 1905 it is based on the total cut.

Rights of Stockholders

The supreme court of Wyoming, in a recent decision, states that the right of the stockholders of a corporation to inspect the corporate books and records was recognized at common law, and, in many jurisdictions in the United States, has been further secured by statute. It is generally held that the right cannot be annulled or abrogated by the by-laws of the corporation. At common law, or in a jurisdiction where there is no statute regulating the matter, the right to make an inspection is not absolute. It may not be exercised for the mere gratifiction of idle curiosity. It is upon the stockholder, demanding the right of inspection, to show that some necessity exists; that some interest is at stake. But where a by-law of a corporation expressly provides that the books and papers of the company shall be open to inspection at all times during the day, or during business hours, it is held that the effect of such by-law is to extend the common law right so that a stockholder may come into court and demand writ of mandamus compelling the officers to allow him to inspect, without setting forth or proving the purpose for which the examination is sought.

Telephone a Public Convenience

The case of Rev. Plummer against Mr. Hatlestad, manager of the telephone exchange at Radcliffe, Iowa, tried at the last term of the Hardin district court, has been decided in vacation. A temporary injunction had been secured against the defendant, a druggist, restraining him as manager of the telephone exchange from refusing to give the preacher telephone service. For the violation of the injunction the defendant was later charged with contempt of court. The court, in the final review, found for the plaintiff, holding that the injunction was issued properly and fining the manager $50 for contempt of court.

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Telephone Talk Worth Thinking About

BY WILLIAM WALTER WELLS

The center of interest in the struggle for Independent telephone supremacy has, for the time being, been shifted from Chicago to Boston and other New England points.

The Chicago franchise question is likely to remain unsettled until after the April election. Many aldermen and Mayor Dunne, backed by the Municipal Ownership League and the Federation of Labor, are coming to the conclusion that the telephone and traction problems should be submitted to the people and a referendum vote taken.

In the meantime the capitalists back of the Illinois Tunnel telephone franchise are going ahead with their plans and have placed heavy orders for automatic telephones so that, whatever may become ultimately of the Illinois Manufacturers' franchise ordinance, Independent connection with Chicago is assured. The Chicago (Bell) Telephone Co. is still keeping up its unscrupulous warfare against the inevitable—fighting, however, no longer against competition only but for self-preservation.

It seems to me that wherever the Bell people enter into a struggle nowadays they make dunderheaded fools of themselves. In the days of auld lang syne, when bluster and money secured victories, the monopolists managed to remain on top; but now, when good judgment and diplomacy are required to gain the upper hand, they are falling down everywhere. The cracked old Bell has plenty of airy bluff left, but it is sadly in need of brains.

The Independent organizers of today are men of mental resources and experience and under their logic the pitiable arguments of the Bell officials are ground into fine dust.

BOSTON THE CENTER OF INTEREST.

In Boston, the good old Massachusetts town long sacred as entertaining within its precincts the sanctum sanctorum and the high priest of Belldom, the Metropolitan Home Telephone Co. was granted a franchise on December 13, which, a few days later, was vetoed by Mayor Fitzgerald. On December 28, however, the progressive aldermen passed the franchise over the mayor's veto, whereupon his honor vowed that he would "knock out" the Independent company by giving it a long and bitter contest in the courts. Eleven aldermen voted against the mayor and only two voted to sustain his veto. All of which goes to show that the people of Boston, like the people of other cities, want telephone competition.

The Metropolitan Home Telephone Co. received its charter from the secretary of state on May 21, 1906. Its authorized capital is $5,000,000, but the plans of its originators involve an expenditure of $10,000,000, it being the aim of the company to open the way for Independent connections throughout New England and the Middle Atlantic and Central Western states.

Arthur W. Hoge, who is a brother of James B. Hoge, president of the International Independent Telephone Association, has taken a prominent part in pushing the Boston franchise; and this has led some of the New England papers to announce that the International Association is to be the holding company for the Boston company's securities. The foolishness of this statement is apparent to all who know what the International Association represents. There is, of course, no doubt that its vast membership is in thorough sympathy with the opening of Boston and New England, but as far as the financial part of the rumor goes it is too silly to merit contradiction. The fact of the matter is, the Metropolitan Home Telephone Co. is able to finance its own affairs and is backed by men of means, many of whom are residents and business men of Boston.

The International Association is not a holding corporation in any sense of the word. It is an association of Independent telephone men and its principal purposes are to protect Independent operators against encroachments from the outside, to cement them into a unified body, to promote fellowship and to establish standard accounting methods and uniform plans of construction. To these ends the members are working together in perfect harmony, but the idea of making the Association a financial organization has not been dreamed of outside the newspaper offices of conservative old New England.

CONNECTICUT IS WAKING UP.

Hitherto the Southern New England (Bell) Co. has had everything its own way in Connecticut. Under the present monopoly law it can extend its lines to any town in the state and establish exchanges wherever it pleases. The few Independents in the utmeg State have grown tired of this state of affairs, and the Farmington Valley Telephone Co. has already made application to the legislature for rights equal in every respect to those enjoyed by its Bell competitor.

Ex-Congressman Lewis Sperry, of Hartford, working with the Farmington Valley people, has applied for a charter for the Connecticut Telephone Corporation which provides for similar privileges; and in various towns public meetings have been held demanding of the legislature the repeal of the existing telephone monopoly law or the granting of charters to new companies.

The opening of Boston will give an enormous impetus to the organization and construction of Independent lines not only in Connecticut, but throughout New England, and as there is an abundance of idle local capital in that section of the country it is highly probable that during the next two or three years the development "down east" mNay be more extensive than in the central states or the west where the Independent cause is firmly established on a financial sound basis.

WHERE THE MONEY WILL COME FROM.

During the past year Wall street has absorbed so much money that the banks of the East have been, what might be called, virtually cleaned out. The managers of the various pools and cliques have been interested in boosting the prices of securities and raising the rates of dividends, regardless of the real earning capacity of the various properties controlled. Such manipulation demands huge sums of money and has produced two notable results. First, the New York banks are tied up for months to come. Secondly, the people are out of the speculative market.

The sharks of Wall street are watching for a chance to devour each other, and unless our beneficent treasury department comes to their assistance again (as it has many times during the past three years) the bubble is bound to burst. While the banks are involved heavily, yet they are secured amply, and the collapse will not

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carry a panic in its wake. Wall street has no perceptible influence on the general prosperity of this vast country, because the American public is not gambling very freely at present. The lamb has learned that it is not safe in the protection of bulls or bears.

For that reason there are millions of dollars seeking investment in legitimate enterprises, especially in the smaller towns of New England and in the central states. The ease with which important Independent telephone deals have been financed in Cleveland, Buffalo, Toledo, Detroit, St. Louis and other cities is evidence that the people are willing to put their money in telephone securities, provided the companies are organized on a sound and honest basis.

There never was a time, therefore, when the future of Independent telephony looked brighter than just now, and for the sake of this great and helpful industry I hope that none of its representatives will do anything to destroy the confidence it enjoys or make the people distrustful of its methods.

I say this because great prosperity is always accompanied by great temptation, and among a little army of promoters there are always a few who would rather jeopardize a cause than give up the hope of picking up a few thousand dollars. Human nature is human nature in the telephone business, as well as on Wall street or in the pulpit; and, with hundreds of us weak mortals, eternal vigilance is the price of honesty.

The public is tired of trusts, combinations and gambling. The day is past when franchises can be secured upon a mere request; municipalities nowadays want a quid pro quo for the privileges they hand over to public utility corporations. Fifteen or twenty years ago—in the halcyon days of Bell rule—the almighty dollar was an all-conquering power. It still is a potent factor, but of late the public conscience has been awakened and the days of the boodler are uncertain.

These wholesome reforms have worked for the benefit of legitimate competition and honest capitalization, and they are responsible, more or less, for the many Independent telephone franchises that were secured during the record-breaking year, 1906. Agitation and organization, rightly directed, are momentous forces; but, in the hands of self-seeking and short-sighted men, they degenerate into a menace and danger.

ALLEGED TRUST OF MANUFACTURERS.

You could have knocked me down with a feather the other day when a gentleman connected with the Department of Commerce and Labor asked me "about that proposed combination of telephone manufacturers," which, he said, "ought to be nipped in the bud." I told him frankly that I did not know anything about the alleged offensive and defensive alliance.

The way he told the story was interesting to me. Perhaps it will be equally so to you. A number of manufactures of telephone apparatus and supplies, he said, recently held a meeting for the purpose of combining their interests. The alleged association was to appoint committees to fix prices of telephones, batteries, switchboards, etc., to regulate credits and to divide the country into sections, each section to be supplied from a certain factory. To all intents and purposes, he concluded, such combination would be in direct violation of the national anti-trust law and of the trust laws of the various states in which it might attempt to operate. He considered the time ill-chosen for the formation of such an organization and insinuated that the federal government would not fail to interfere, provided the projectors of the plan should attempt to carry it out.

I do not believe that any of the telephone manufacturers of the United States, who are the equals in intelligence of any class of prosperous business men, would obey the voice of any temptor long enough to be caught in such a combination as that here outlined. With the power of the government in hot pursuit of the Standard Oil and other trusts, their common sense alone would tell them that any connection with such a game would be dangerous to every individual concerned, to say nothing of its effect on the general Independent telephone situation.

Of course, I made inquiries to ascertain if there was any foundation whatever for the rumor, and was assured by several prominent manufacturers that they knew absolutely nothing about the alleged combination. Mention is made of the matter here simply to keep the telephone public en rapport with all the news, genuine and otherwise, which is going the rounds in the various centers of trade.

SEMI-AUTOMATIC PLANT PLANNED.

It is rumored that certain inventors and capitalists who have unbounded faith in the merits of the semi-automatic telephone will shortly organize a company for the manufacture of that type of instrument, the factory to be located either in Illinois or Ohio. A number of noted engineers have been experimenting with the semi-automatic system; and, I am told, that in the laboratories and workshops of Milo G. Kellogg gratifying results have been obtained.

Big Eastern Company Organized

The American Union Telephone Co., a full account of whose plans was published in the November issue of SOUND WAVES, completed its organization last month by the election of the following officers: President, Judge Ellis Orvis, Bellefonte, Pa.; vice president, B. F. Meyers, Harrisburg, Pa.; general solicitor, Lyman D. Gilbert, Harrisburg, Pa.; secretary and treasurer, S. R. Caldwell; general manager, F. D. Houck, formerly general superintendent of the United Telephone & Telegraph Co. at Lebanon, Pa. The new corporation is capitalized at $25,000,000, divided in 100,000 shares of preferred and 150,000 shares of common stock of a par value of $100 each. Two million dollars of each has been issued. The preferred stock is entitled to a six per cent annual dividend, non-accumulative. The executive offices are located in Harrisburg, Pa.

To Investigate Chicago Situation

The committee on gas, oil and electric light of the Chicago city council has appointed Prof. D. C. Jackson, of the University of Wisconsin, and Dr. George W. Wilder and W. H. Crumb, of Chicago, as an expert commission to submit a report on all the financial, operating and construction questions submitted by the engineers and financiers of the Chicago Telephone Co. and the Illinois Manufacturers' Association during the recent consideration of the telephone franchise ordinances. The commission, which is a strong and excellent one, is expected to report on rates, equipment, cost of operation and installation. Liberal fees will be paid to the members of the board.

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Selective Party Lines

By EINAR BROFOS

PART II.

IMPEDANCE DUE TO RESISTANCE AND REACTANCE.

All substances oppose or resist the passage of an electric current. This property is called Resistance.

To drive an electric current through resistance requires power in the form of E. M. F.

The well-known ohms law gives us the relation between current, voltage and resistance. This law states that the resistance is directly proportional to the voltage, or E. M. F., and inversely proportional to the current,

-EQUATION 3.- $E_1 = 4 \cdot f \cdot C \cdot L$	-EQUATION 4.- $L = \frac{E_1}{4 f \cdot C}$	-EQUATION 5.- $E_1 = \frac{4 f \cdot Q \cdot T}{100,000,000}$
-EQUATION 6.- $Q = B \cdot A$	-EQUATION 7.- $B = \frac{4\pi \cdot C \cdot T \cdot \mu}{10 \cdot l}$	-EQUATION 8.- $A = \pi \cdot r^2$
-EQUATION 9.- $Q = \frac{4\pi \cdot C \cdot T \cdot \mu \cdot \pi \cdot r^2}{10 l}$ SOUND WAVES.	-EQUATION 10.- $Q = \frac{4 \cdot \pi^2 r^2 C \cdot T \cdot \mu}{10 l}$	-EQUATION 11.- $L = \frac{Q \cdot T}{100,000,000 \cdot C}$

Equations 3 to 11

or in an equation form: (see equation 20). R. denotes resistance in ohms; V, E. M. F. in volts and C, current in amperes. The resistance manifests itself in a peculiar fashion, in that it changes into heat a portion of the electricity a conductor conveys.

There are, however, other phenomena, which occur when an electric current flows in a conductor, which may seem still more peculiar than the ordinary effect of resistance. It was stated in Part I of this article, that when a current traverses a wire, lines of force or a magnetic field surrounds the wire. It was also found that if a wire was moving in such a direction as to cut across a magnetic field an E. M. F. would be developed in the wire. This, however, may be stated in another way; by saying that if magnetic lines of force are moving in such a manner as to cut across a wire an E. M. F. will be induced in the wire. We may therefore conceive that the induced E. M. F. does not depend upon whether the wire is stationary and the magnetic field is moving, or the wire is moving and the field is stationary. It is only the relative change between the two mediums which needs to be considered.

Suppose that a varying current, for instance an alternating current as shown in Fig. 3, is sent through a wire

-EQUATION 12.- $L = \frac{4 \cdot \pi^2 \cdot r^2 \cdot C \cdot T \cdot \mu \cdot T}{10 \cdot l \cdot 100,000,000 \cdot C}$	-EQUATION 13.- $L = \frac{4 \cdot \pi^2 r^2 T^2 \mu}{1000,000,000 \, l}$	-EQUATION 14.- $P = 2 \cdot \pi \cdot r \cdot T$
-EQUATION 15.- $P^2 = 4 \cdot \pi^2 r^2 T^2$	-EQUATION 16.- $L = \frac{P^2 \mu}{1000,000,000 \cdot l}$	-EQUATION 17.- $L = \frac{P^2}{1000,000,000 \frac{1}{\mu}}$
-EQUATION 18.- $l = \frac{1}{\mu} + l_a$ SOUND WAVES	-EQUATION 19.- $L = \frac{P^2}{1000,000,000 \, l_a}$	EQUATION 20 $R = \frac{V}{C}$

Equations 12 to 20

of no ohmic resistance. Also consider another wire, locate alongside the first wire, as shown in Fig. 13 in which W is a section of the wire conducting the current, while V is the other wire. We will now try to determine the relations which exist between voltage, mgnetism and current in this typical case.

The number of lines of force, set up by any current is (other things remaining the same) strictly proportional to the amount of that current, and exactly in phase with it. That is to say, the current and magnetism vary together; consequently, in this case, the magnetism will follow the alternating current curve in Fig. 3.

Now then consider the alternating current starting at zero, gradually increasing to maximum and, as before stated, the lines of force will do the same, gradually expanding in a manner as shown by Fig. 13 A. In doing so the lines of force will cut across the wire V in a direction as shown, and according to our previous conception, an E. M. F. should be induced in wire. This induced E. M. F., however, is in an opposite direction to the E. M. F. in W, as we gather from Fig 13A, the fact that the lines of force encircling W are moving from left to right, while the same lines of force, when encircling V, are moving from right to left. Consequently, we may designate the E. M. F. existing in W as positive and the E. M. F. in V as negative. Now, when the current in wire W is decreasing from maximum to zero, another E. M. F. will be induced in wire V. . This E. M. F., however, we may observe from Fig. 13 B, is in the same direction as the current in wire W. This is owing to the fact that the lines of force, encircling wire W in a certain direction, are also encircling wire V in the same direction. From what has been said about Fig. 13, we may conclude that varying lines of force do not like to cut across a conductor, but will rather encircle the wire in a manner as shown.

Having determined the relations between current, magnetization and induced voltage, we will now attempt to

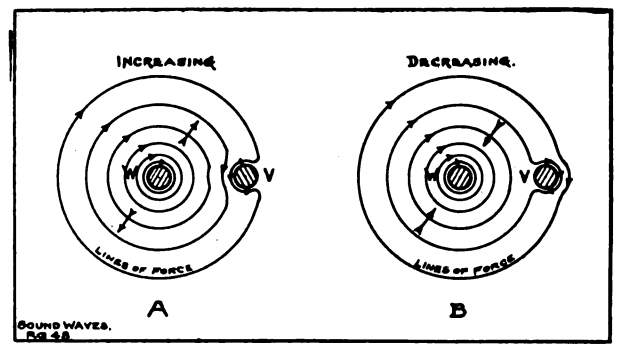

Fig. 13.—Principle of Induction

ascertain the phase relations between the current in W and the E. M. F. induced in V. We know that the magnetization is greatest when the current is greatest; least when the current is least, and will change most rapidly when the current is undergoing the greatest change. From what was stated in Part I we remember that induced E. M. F. is proportional to the speed with which the wire is cutting the magnetic lines of force or the speed with which the magnetism is changing. Therefore the maximum E. M. F. will be induced when the current changes most rapidly, the minimum when the current changes least rapidly. Referring to Fig. 3 we see that the current is changing most rapidly when it is just crossing the zero line, as the current is then passing from one sign to another, hence at this point the induced E. M. F. is maximum. When the current is maximum, it is for the instant not changing at all, consequently at this point, the induced E. M. F. is zero. We have now

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located the maximum and minimum points of the curve of induced E. M. F. The exact position of the induced E. M. F., in relation to the current, may now be determined. Referring to Fig. 14, in which C is the current curve, of the same shape as the curve in Fig. 3. We learned from Figs. 13A and B, that, when the current in wire W was increasing in a positive direction the induced E. M. F. in wire V was in a negative direction, also that when the current was decreasng in a positive direction, the induced E. M. F. was also in a positive direction. Therefore, remembering that maximum change in current occurs at "b" and minimum at "a," we may consequently locate curve V from d to f. The remaining part of the curve from f to g is, of course, ascertained in a similar manner. Fig. 14 therefore tells us that the current in W leads the E. M. F. induced in V by ¼ of a cycle or 90°. Consider now another case, when the two separate wires W and V in Fig. 13 were connected together so as to form one circuit and wound in a helical form as shown in Fig. 15. In this case we see that turn W will act upon turn V^1, and V^1 again react upon W^2, and induce E. M. F. in a manner similar to that shown in Fig. 13A and B. That is to say, current flowing through $W^{1'}$ will induce an E. M. F. in V^1, but the same current when flowing through V^1 will also induce an E. M. F. in W^1. This voltage or E. M. F. will consequently lag 90° behind the current as shown in Fig. 14; C being the current flowing while V the induced E. M. F., as

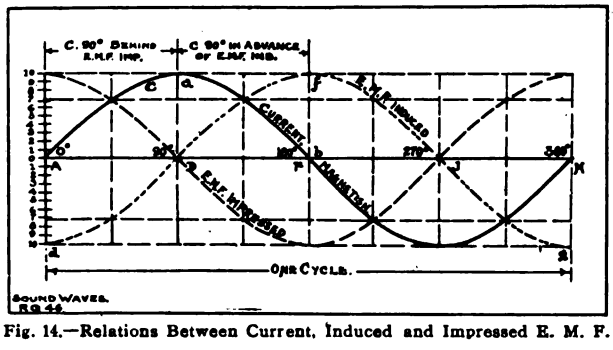

Fig. 14.—Relations Between Current, Induced and Impressed E. M. F.

before. To overcome this voltage an exactly opposite voltage is required; that is, the curve of voltage required to drive the assumed current C through the coil will lay on the opposite side of the line, that is, opposite the curve of voltage induced in the coil. This voltage curve is shown by Z, Fig. 14. Hence the so-called impressed voltage required to overcome induced voltage, or counter E. M. F., will be 90 deg. in advance of the current. In other words, C. E. M. F. causes the current to lag 90° behind the impressed E. M. F. or voltage. This effect of the current lagging behind the impressed E. M. F. is due to what has been termed "self induction" or "inductance" of a current.

We will now attempt to define some of the laws governing this effect. Since the induced E. M. F. in a coil of wire depends upon the rate of cutting lines of force, it is obvious that if the coil is so constructed that it can easily set up lines of force, through itself, the induced E. M. F. or C. E. M. F. will be large. It also follows that if the coil has a large number of turns the C. E. M. F. will be large, because each of the turns will cut the lines of force encircling the coil. The higher the frequency of the current the more rapid will be the change in the lines of force and hence the higher the induced or counter E. M. F. It may therefore be said that the induced E. M. F. will be proportional to the total number of lines of force encircling the coil, also the number of turns and the frequency of the current. The total number of lines of force will be in direct proportion to the current, when the number of turns is constant. In this case, however, we are considering the coil to be surrounded by air. If it were surrounded by iron the E. M. F. would be increased many times, because the lines of force can more easily encircle the coil. We may therefore understand that the induced E. M. F. does not only depend on the current and frequency, but also on another quantity, which takes into consideration the location of the coil and the facility with which the lines of force may be set up around it. This quantity is known as "co-efficient of self-induction." The practical unit of self-induction is the "Henry," which may be defined from our previous investigations, as the amount of self-induction existing in a circuit, that will induce one volt, when the current varies uniformly at the rate of one ampere per second. From this rule it is apparent that the C. E. M. F., in a circuit of given inductance, varies with the strength of the current and with its frequency or rate of change. Therefore, by stating this in an equation way, we will get it. (See equation 3.) By transposition, (see equation 4). In these and the succeeding equations E. denotes C. E. M. F., or induced voltage. L. the co-efficient of self-induction in Henry's f. denotes number of cycles per second. Therefore when considering an alternating current 4f is the number of times, per second, that the magnetic flux changes from zero to maximum. We will now endeavor to further develop equation 4, in order to enable us to express the coeff of self induction in terms of other quantities than those given in equation 4.

It has been universally adopted as a standard, that the unit of E. M. F., or one volt, is that E. M. F. which is induced in a conductor, which is made to cut lines of force at the rate of 100,000,000 per second. This may be stated in an equation form (see equation 5). Here T indicates number of turns on the coil. Q—total number of lines of force, or magnetic flux,which again is the same as the product of the density of magnetism or lines of force per C. M.², denoted by B, and the area of cross section of the core or A, thus: (See equation 6.) But it may be proved that the magnetic density or, (see equation 7). Where C denotes current in amperes, l the length of the magnetic circuit, i. e. the approximate length of the path of the lines of force; u signifies the permeability of the magnetic circuit, which is equal to the number of lines of force encircling a coil with an iron core, divided by the number of lines of force which would encircle the same coil, without an iron core. This constant, therefore, is equal unity for a coil with no iron core, while for a coil with iron core it varies between 500 and 2,000.

We will now attempt to ascertain a simplified equation for determining the number of lines of force which would encircle a coil of shape as shown in Fig. 16. The area of cross section of this coil would be: (See equation 8). Where II denotes the constant, 3.1416, r the radius of the cross section. Now, then, by substituting the values given in equation 6 by those given in equations 7 and 8, we find that the magnetic flux in a coil with closed magnetic circuit and a core of circular cross section, as shown by Fig. 16 would be: (See equation 9). By cancellation we will get: (See equation 10). Now, then, referring to equation 4 and substituting the values given for E, in Eq. 5 we find

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that coeff. of self induction or (See equation 11.) Substituting Q in Eq. 11 by valves given in Eq. 10, we find that (see equation 12). Abbreviating above, we get (See equation 13). The value of L as given in Eq. 12 is for a coil with closed magnetic circuit of a permeability u, and the core of a circular cross section. If the coil is wound on an iron core, the coeff. of self induction is not constant, as owing to the variable permeability u of the iron core, the magnetic flux per amp. is inconstant. How-

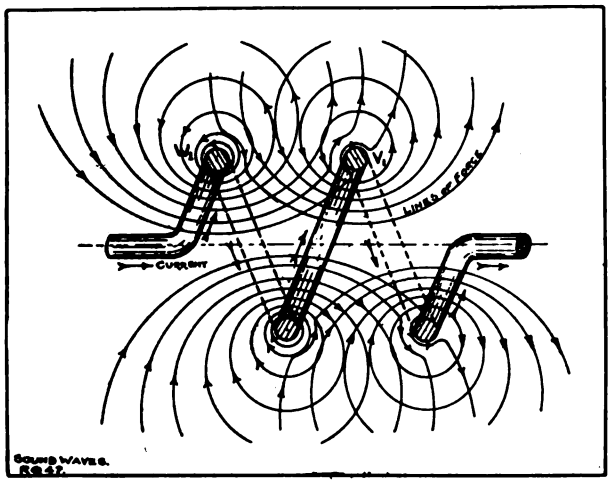

Fig. 5.—Principle of Self-Induction

ever, if the magnetic density is not carried up too high, the variation in the value of L for different magnetic flux will be comparatively small. If the iron core is taken out entirely and the coil wound on a wooden spool, we may understand that L does not vary with any change in current, as in this case u, being unity, may be cnceled from the equation. In this event, we find that L is proportional to the linear dimensions of the coil, the number of turns being unchanged. For instance, a given coil has a coef. of self-induction of 0.3 Henry, while another coil, three times as large in length, diameter, etc., but having the same number of turns of wire has a coef. of induction of 0.9 Henry. We may also notice that L is proportional to the square of the number of turns or T. For instance, a coil wound with No. 16 wire has 1,000 turns and a coeff. of self-induction of, say, 0.05. The same coil wound with No. 28 wire would have about ten times as many turns, and its coeff. of self-induction would be 100 times as great, or 5 Henrys. As the unit of self-induction or the "Henry" generally is too high for practical purposes, the term "Milli-Henry" is used, which means one thousandth of a Henry.

Continuing the evolution of the coeff. of self-induction of a coil we find that if the wire is wound in a thin layer on the core, the length of wire will be approximately (see equation 14), where P denotes length of wire, while r and T radius of core and turns of wire, respectively, as before.

If we square the value for the length of wire, or P, we get: (See equation 15). However, the value given for R^2 in Eq. 15, we may observe, also appears in the numerator of Eq. 13; therefore if we substitute this by R^2 we find that (see equation 16), which is the same as: (see equation 17). From these equations we may notice that the coeff. of self-induction for a coil wound in a thin layer is approximately proportional to the square of wire on a coil.

Consider now a coil wound on an iron core of circular cross section, but with an air gap introduced in the magnetic circuit, that is to say, a core of the so-called horse shoe form, as shown in Fig. 16. The equivalent length of the magnetic circuit of a coil of this form will be (see equation 18), where li denotes the length of the magnetic circuit in iron, while la is the length of the magnetic circuit in air.

The opposition, or so-called "reluctance" offered by the iron to the lines of force is u times less in iron than in air; hence we get the expression li u. The quantity li u, however, is usually small in comparison with the value for the length of the magnetic circuit in air, or la. Therefore neglecting the former, we find that the coeff. of self-induction for a coil, wound on an iron core, with an air gap of not too small dimensions, is approximately: (see equation 19). This formula shows us that the value of L for a coil, as above explained, is approximately directly proportional to the square of the length of wire and universally proportional to the length of the air gap. P. la and li should be expressed in centimeters. The preceding shows us clearly that the self-induction of a coil wound on a closed iron ring, for instance, of a shape as the coil shown in Fig. 16, is very high when subjected to an alternating current, and varies with the current. If, however, a cut is made in the iron core, so as to introduce an air gap, as shown by la in Fig. 16, we may observe from Eq. 16 that as la increases the permeability u will decreasingly effect the value of L. This is owing to the fact that the reluctance, which the air gap offers to the magnetic flux, is so many times greater than

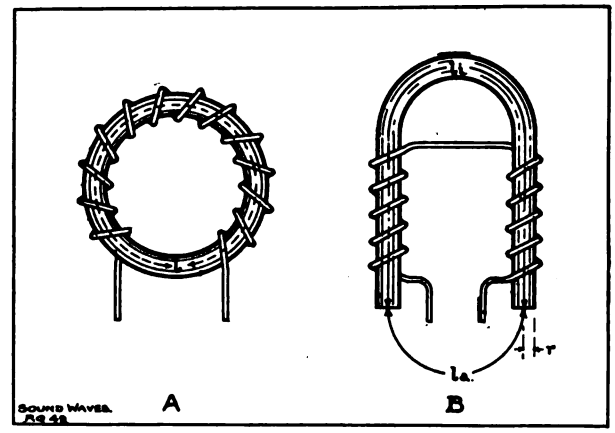

Fig. 16.—Open and Closed Magnetic Circuit

that which the iron path offers. Therefore, when the air gap is sufficiently large the self-induction will be the same as if no iron were present in the core.

Wireless 'Phone in Germany

The German Society of Wireless Telegraphy has succeeded in holding wireless telephonic communication between Berlin and Nauen, twenty-four miles away. Prof. Slaby in an interview described the experiment as eminently successful. The conversation was carried on partly by Herr Von Sydow, under secretary of the postal department, who received perfectly intelligible repetitions to his questions. Prof. Slaby says the problem of wireless telephony is solved, but that the limit of distance is not yet known. He sees no reason to set any limit and believes that the time is coming when a man will be able to speak wirelessly to a friend in any part of the world. The method employed today consists of the use of the microphone in connection with the ordinary wireless telegraph apparatus.

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Telephone Traffic and the Recording Ammeter

By CHARLES H. COAR

PART II.

The use of recording ammeters or wattmeters in light or power stations to determine the current consumption and load conditions has proved to be of immense value. Likewise any desirable make of a current recording instrument, adapted to the electrical conditions of an exchange system, will be of much value to the traffic department, when it is installed in such manner that its record bears a definite relation to the telephonic load or, in other words, the number of connections during a predetermined time. This result may be accomplished through the aid of a recording wattmeter of ammeter, but preference should be given to that type of instrument employing a clock chart upon which a movable pen records every current fluctuation for a certain period, usually twenty-four hours. The charts may be filed and form a very desirable record of information and can be utilized to good advantage in making future traffic calculations. The application of this type of instrument to a central energy system is a comparatively easy task, for the usual arrangement of supplying current to the lines and apparatus lends itself readily to such an installation. The source of current in most instances consists of a storage battery and generator for charging the same. Under ordinary conditions the current load is taken from the cells by means of a distribution system arranged on what is known as the fuse panel board. The feeds to the current consuming apparatus are sub-divided on the panel board so that it is possible by introducing recording instruments at this point to properly record the amount of current consumed by the different portions of the exchange affected; or, on the other hand, the main feeders supplying current to the panel board and exchange as a unit can be equipped with a recording instrument so that this one instrument will record the total amount of current used in the entire system. Reference to Fig. 4 will possibly aid in bringing out some of the apparatus affecting the current consumption during an ordinary conversation between two subscribers of an exchange. In this circuit the various relays and lamps associated with the line and cord apparatus are shown and the resistances of these parts designated. It is essential that the circuit operation be known when using total load records for estimating purposes.

For instance, when subscriber "A" takes his receiver down this provides a circuit for the 40 volt battery to flow over. The circuit may be traced through the line relay L R and differential relay M N, the telephone apparatus and line wires. This operation consumes a certain amount of current and the line lamp L L glows, current flowing to the lamp through a pilot relay, P L. This combination as a whole tends to consume a certain amount of current until the operator plugs into the answering jack, when a certain portion of the apparatus becomes disconnected and there is substituted, in its stead, other apparatus associated with the cord circuit as shown. Or, in other words, we pass from a line equipment current supply to a cord circuit supply, because the subscriber's telephone at "A" would receive its current supply through the M winding of the differential relay, thence though the sleeve conductor of the answering pack, plug A J, and supervisory relay A R. Under this condition a different amount of current is consumed and when the "A" subscriber hangs up his receiver the supervisory signal A S lights, and remains so until the connection is taken down. This briefly describes the operation occurring over one cord only, but the other cord is effected in a similar manner during a completed connection. While a cord circuit is supplying the current, a different portion of current is taken from the storage battery, so it will be readily seen that each different operation readjusts the circuit arrangements in such manner that a change is effected in the current consumed. In a like manner the "B" positions, or trunking apparatus, which are used in completing calls between various subscribers of different exchanges, affect a change in the current consumption, and, although these circuits operate along the general idea used in a regular cord circuit, they do not necessarily consume the same amount of current.

The chief operator and monitor equipments, as well as the operator's transmitter sets, also aid in enlarging the total current consumption of an exchange equipment. In addition to this equipment there may be feed-

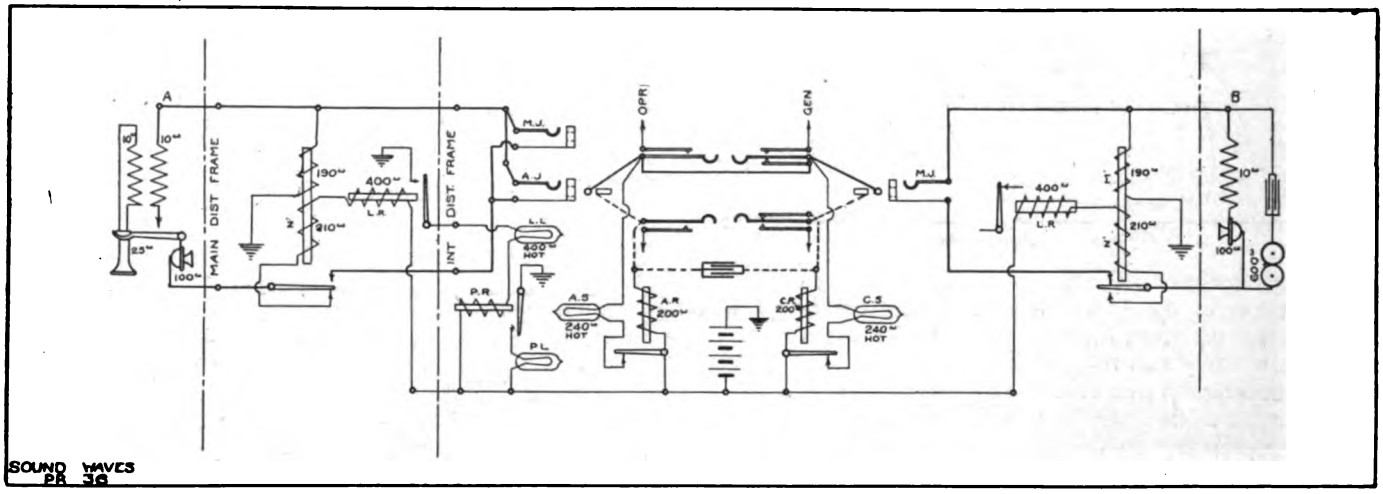

Fig. 4.—Current-Consuming Elements of a Central Energy Exchange

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ers supplying current to private branch exchanges, or to ringing machines, busy backs, tone tests, don't answer signals, etc., so that we may designate the various current consuming portions of an exchange system under the following classifications, as is often done on the panel boards:

TOTAL CURRENT CONSUMPTION.

1. Line signal relays.
2. Line lamps,
3. "A" operator cords,
4. Supervisory signals,
5. "B" operator's cords,
6. Transmitters,
7. Wire chief,
8. Cnief operator,
9. Tone test, busy back, don't answer, etc.,
10. Ringing machine,
11. P. B. X. feeders,
12. Emergency lamps,
13. Alarm signals.

It may be well to briefly analyze this outline, in order that the manner in which the various parts noted affect the total current consumption may be better understood.

1. Under the classification of line signal relays would be recorded the amount of current consumed by subscriber's telephones and lines and line relays which, in turn, operate line signals prior to the time an operator plugs into a line jack and disconnects a portion of the apparatus. This current load then depends largely on the number of calls and answering speed of the operators.

2. The current to the line lamps or signals being regulated by the line signal relays, in most instances

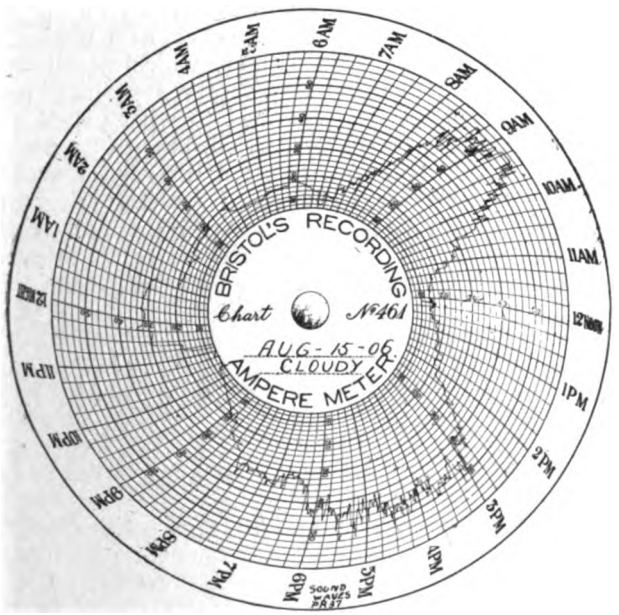

Fig. 5.—Current Record Chart, Normal Discharge

would necessarily bear a definite relation to the current consumed under classification 1.

3. The current consumed by this portion of a system is utilized by the subscribers for talking purposes, in addition to operating two or more relays used for supervision purposes. The total amount of current used by this portion would depend upon the number and duration of the conversations and upon the promptness of both subscribers and operators.

4 The current consumed by the supervisory signals will depend upon the number of telephone connections and, in most instances, upon the promptness of the operators in taking down connections.

5. The "B" operator's cords would consume such current as was utilized for conversation and signaling purposes over trunk lines existing between two ex-

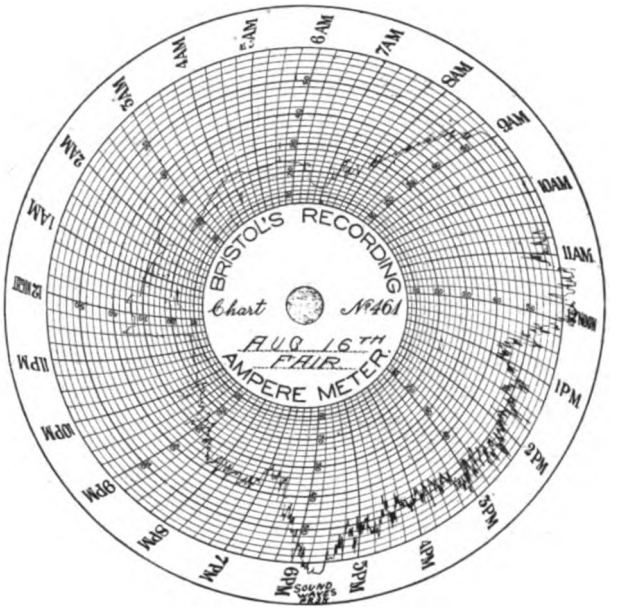

Fig. 6.—Current Record Chart, Abnormal Discharge

changes. The amount of this current would then depend on the percentage of trunking between the two exchanges and upon the length of the conversations and operating speed.

6. The current utilized for operating the various transmitter circuits of the operators will vary in amount, owing to the fact that more operators are necessary during certain portions of the day. This load should bear a distinct relation to classifications 1, 2, 3, and 4.

7. The wire chief's current load should not vary to any great extent, except during times when a great amount of trouble exists which would necessitate a larger number of operations over this apparatus. This load should be entirely absent after working hours unless the office be maintained during the night time.

8. The chief operator's equipment will consume a supply closely in proportion to the wire chief's apparatus. However, the current consumed by the chief operator's apparatus will be readily affected by any increase in the operating load, and, unlike the wire chief's apparatus, will consume a certain portion of current after business hours, as in large exchanges it is the usual practice to have a chief operator in charge at all hours.

9. Tone tests, busy backs, don't answer signals, etc., when arranged to operate from the exchange battery, each consume a certain portion of current, depending upon the circuit conditions and the extent to which they are utilized. Therefore this current load must bear a relation to the number of calls registered, this being especially true with reference to the number of calls handled over trunking equipment.

10. It is not the usual custom to operate the ringing machines from the exchange battery, except in cases of emergency and, for this reason, the current consumed by this apparatus would not enter into any calculations under ordinary conditions.

11. The current supply to private branch exchanges has become quite a factor in large systems, and fre-

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quently constitutes a very heavy load in itself. The business being supplied by these systems being, however, mostly commercial, should not call for the consumption of much current after business hours. The load consumed by these systems should follow closely along with the regular exchange load.

12. Under this classification may be placed the amount of current used for illumination purposes under circumstances where the regular source of light is defective. This load would not enter into any calculations with regard to the traffic conditions.

13. The current consumed by alarm systems, such as fuse alarms, circuit breaker alarms, fire alarms, etc., can not be considered as a regular exchange load, although at times any of the apparatus mentioned may consume considerable current.

The apparatus mentioned all combined consumes the total current load of a system, and by arranging to record the current consumed by any of the portions noted as regular operating factors means are provided for determining the actual telephone load conditions.

In other words, by obtaining the average length of a conversation from a peg count and determining the average amount of current consumed per connection, the number of connections for a certain period may be derived from the total amount of current consumed by these operations during this time. Each portion, or operation, in an exchange system, where electricity is utilized as energy, lends itself readily to such a calculation. It is necessary, of course, to analyze the circuit conditions in order that the various amounts of currents consumed by the different apparatus affected may be known prior to conducting any subsequent calculations by means of a total current load.

It should require no extended discussion as to what may be accomplished by the aid of recording instruments in a telephone system; but, as a closing argument, let us cite two instances wherein the great differences in two telephone loads are made plainly evident in the records of the total amounts of current consumed during both these instances.

Now as to some results obtained by the use of a single recording ammeter, arranged to record the total current consumption in an exchange system, let us refer to the chart, shown in Fig. 5, which graphically illustrates the total current load in an exchange of approximately 7,000 working lines for a period of twenty-four hours. This chart shows plainly the load distribution throughout this period, and may be taken to represent an ordinary day of exchange practice. The peak of this operating load occurred at 11:15 a. m., while the minimum point was reached at 11:45 p. m. From the perusal of a large number of these charts, which forms a very fascinating study, a great similarity will be found to exist among the load curves of certain days or hours, and any event which stirs up excitement in a community, such as a fire, murder, train wreck, readily shows its influence in the telephone service, by altering the path ordinarily traveled by the recording pen. As a means of illustrating this fact let us refer to Fig. 6, a companion chart to Fig. 5, which was obtained upon a day when the traffic conditions were greatly altered because of some event of popular interest, the event in this instance being the parade of the Grand Army of the Republic which occurred August 15, 1906.

Possibly 60,000 veterans participated in this parade, which lasted approximately four hours, starting at 10:30 a. m. Reference to the load curves shown in Figs. 5 and 6 will clearly bring out the effect that this event had on the telephone traffic.

The curve shown in Fig. 6 plainly informs us that on this day some condition existed which altered the traffic in such manner that what would otherwise have been very busy hours appear as a minimum here. Observe the two records shown and compare the noon hour loads.

The record of August 15 corroborates the fact that the larger share of business pursuits closed during the hours of the parade, and the load curve, as a whole for this day, appears somewhat lighter, which would tend to show also that this day was observed partially as a holiday. It need not be mentioned to what extent this comparison may be profitably carried, but it is sufficient to say that this comparison between records, as shown, affords a very convenient method of studying telephonic traffic, and should therefore commend the use of the instruments necessary to accomplish this result in every central energy system.

The Hero of Manitoba's Telephone Fight

The defeat of the Bell monopoly in Manitoba brings into prominence one who for the past seven years has been the central figure in the fight for telephone freedom in the Dominion of Canada. We refer to Francis Dagger, the organizer and director of the recent campaign in Manitoba, and to whose diplomacy and indomitable efforts the success already chronicled is mainly due.

There are probably few people who realize what an important factor in Canadian telephone matters Mr. Dagger has been. We therefore place before our readers the following interesting facts regarding Mr. Dagger's work in Canada.

When Mr. Dagger came to Toronto, seven years ago, with the exception of a few small Independent systems in Quebec, the Bell Telephone Co. had an absolute monopoly. In Ontario there were no competing systems and so far as any knowledge of the Independent movement was concerned, the United States might have been part of the old world.

On his arrival in Toronto, Mr. Dagger, with nineteen years' practical experience as a prominent official discovered that even worse conditions prevailed on this continent, determined to concentrate his efforts in the direction of improving telephone conditions in Canada. The prospect which offered was not an inviting one and only a determined and resolute spirit would have embarked upon the task. Mr. Dagger, however, being confident of his ability to render his efforts successful, immediately set to work to study the Independent movement in the United States, and commenced what was then a single handed fight against telephone monopoly in Canada. The practical telephone experience of Mr. Dagger, his thorough knowledge of European conditions, supplemented by facts regarding the Independent movement in the United States, coupled with his undoubted

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OFFICIAL RETURNS OF VOTE ON MANITOBA TELEPHONE BY-LAWS

Municipality	Yes	No	Majty for	Majty against	P'rc'tge for
Albert	11	50	....	39	....
Argyle	111	93	18	....	54
Archie	33	4	29	....	89
Arthur	83	50	33	....	62
Assiniboia	55	4	51	....	93
Birtle Town	26	2	24	....	93
Birtle	197	56	141	....	78
Blanshard	92	39	53	....	70
Boissevain	67	39	28	....	63
Boulton		Not heard from.			
Brandon City	312	85	227	....	79
Brenda	151	35	116	....	81
Brokenhead	26	115	....	89	....
Cameron	131	79	52	....	62
Carberry	33	15	18	....	69
Carman	56	23	33	....	71
Clanwilliam	48	30	18	....	61
Cornwallis	39	8	31	....	83
Cypress North	98	63	35	....	61
Cypress South	50	112	....	62	....
Daly	81	111	....	30	....
Dauphin	136	193	....	57	....
Dauphin Town	105	65	40	....	62
Deloraine	51	41	10	....	55
DeSalaberry	53	135	....	82	....
Dufferin	296	317	....	21	....
Edward	131	62	69	....	68
Ellice	22	7	15	....	76
Elkhorn	42	13	29	....	76
Elton	152	124	28	....	55
Emerson Town	47	23	24	....	67
Ethelbert	16	135	....	119	....
Franklin	229	88	141	....	72
Gilbert Plains	132	216	....	84	....
Gilbert Village	29	3	26	....	91
Gimli	11	28	....	17	....
Gladstone	29	16	13	....	64
Glenwood	46	28	18	....	62
Gretna Village	27	56	....	29	....
Grandview	95	61	34	....	61
Grandview Village	42	15	27	....	74
Grey	44	63	....	19	....
Hamiota	186	80	106	....	70
Hanover	nil	158	....	158	....
Harrison	30	36	....	6	....
Hartney	40	11	29	....	78
Kildonan	99	20	79	....	83
Killarney	70	44	26	....	61
La Broquerie	40	67	....	27	....
Langford	72	125	....	53	....
Lansdowne	91	188	....	97	....
Lorne	206	81	125	....	72
Louise	44	100	....	56	....
Macdonald	91	50	41	....	65
Manitou	37	24	13	....	61
Melita	38	15	23	....	72
Minnedosa	43	37	6	....	54
Miniota	135	71	64	....	66
Minitonas	46	75	..	29	..
Minto	85	63	22	....	58
Montcalm	75	208	..	133	..
Morden	49	58	..	9	..
Morris	27	117	....	90	....
Morris Town	26	16	10	....	62
Morton	129	27	102	....	83
Mossy River	33	117	....	84	....
Norfolk Nor.	200	275	....	75	....
do Sou.	221	139	82	....	61
Oakland	101	82	19	....	55
Ochre River	60	154	....	94	....
Odanah	58	35	23	....	62
Pembina	191	155	36	....	55
Pilot Mound	40	39	1	....	51
Pipestone	110	46	64	....	71
Plum Coulee	9	18	....	9	....
Por. La Prairie	343	284	59	....	55
Por. La Town	201	185	16	....	52
Rosedale	88	243	....	155	....
Rapid City	20	38	....	18	....
Rockwood	80	144	....	64	....
Rhineland	45	324	....	279	....
Ritchot	78	186	....	108	....
Roblin	178	113	65	....	61
Riverside	55	58	....	3	....
Rossburn	63	124	....	61	....
Rosser	38	22	16	....	63
Russell	43	45	....	2	....
Sasketchewan	38	95	....	57	....
Selkirk	156	66	90	....	70
Shoal Lake	28	109	....	81	....
Shell River	148	221	....	73	....
Sifton	121	71	50	....	63
Silver Creek	28	142	....	114	....
Souris	124	37	87	....	77
Springfield	98	140	....	42	....
Stanley	78	237	....	159	....
Strathclair	90	105	....	15	....
Stuartburn	10	105	....	95	....
St. Andrews	75	137	....	62	....
St. Boniface	610	107	503	....	85
St. Clements	19	110	....	91	....
St. Fra. Xavier	58	126	....	68	....
St. Laurent	29	54	....	25	....
St. Paul Psh	39	10	29	....	80
St. Rose	45	150	....	105	....
Swan River	127	158	....	31	....
Strathcona	37	46	....	9	....
Stonewall	35	30	5	....	54
St. Vital	15	13	2	....	54
Tache	163	284	....	121	....
Turtle Mtn.	140	32	108	....	81
Victoria	116	24	92	....	83
Virden	90	35	55	....	72
Wallace	128	67	61	....	66
Westbourne	206	269	....	63	....
Whitehead	80	8	72	....	91
Whitemouth	24	67	....	43	....
Whitewater	132	63	69	....	68
Winchester	32	41	....	9	....
Winnipeg	2984	984	2000	....	75
Woodworth	184	69	115	....	73
Woodlands	31	86	....	55	....
Winkler Village	21	54	....	33	....

ability as a writer, enabled him to carry on an educational campaign in the newspapers which has been far reaching in its effect upon the progress of Independent telephony in Canada today. For some time Mr. Dagger controlled the editorial columns of the Canadian Engineer, and articles from his pen in that journal have been quoted in debates on the telephone question in the House of Commons and in the provincial legislatures, and have had an important bearing upon recent legislation at Ottawa and Winnipeg.

Mr. Dagger acted as advisor to and assisted in promoting several Independent companies which are today operating a large number of telephones in competition with the Bell in Ontario. The Canadian Independent Telephone Association is the outcome of one of these companies, the Markham and Pickering Telephone Co., which established its system as a result of a conference which Alpheus Hoover and other residents of Green River and Markham had with Mr. Dagger in 1901. Mr. Hoover, the president, and A. F. Wilson, the secretary of the Canadian Association, were both members of the Markham company and it is these gentlemen who were first interested in Independent telephony by Mr. Dagger to whom must be credited the organization of the asso-

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ciation. We believe we are correct in saying that there is scarcely an Independent system among those in Ontario today, numbering several thousand telephones, the establishment of which is not, directly or indirectly, due to the work of Mr. Dagger during the first few years he was in Toronto.

We have referred in previous issues to Mr. Dagger's work as technical adviser to the Dominion Government during its inquiry into telephone conditions held in Ottawa in 1905. Under his advice the select committee secured a mass of testamentary and documentary evidence on telephone conditions such as no government, public or private enterprise has ever before presented to the world. His evidence, which covers over two thousand pages, constitutes a work of reference so comprehensive in its value that those telephone men who have been as fortunate as to secure a copy are indeed fortunate. The general manager of a large Independent company a short time ago contemplated spending a large sum in obtaining data which would be useful to him in his fight with the Bell, when he came across a copy of this evidence in the hands of a friend. After perusing it for some time he exclaimed: "Why this is worth $500 to every Independent telephone company in the United States. It contains the very information I want." This record of Mr. Dagger's work at Ottawa is a tribute to his vast powers of research; to his capacity for securing valuable data from every corner of the globe, and to his remarkable ability in making this information of practical use to the telephone world. The cause of Independent telephony, and by this we mean every movement which has for its object the freeing of the people from the Bell monopoly, in Canada has a great future; but, no matter what variety of interests shall extend and develop the movement from this time on, we cannot but recognize that Mr. Dagger has laid the foundation for this great work. His services in the cause have rendered the work of Independent telephone men in Canada much easier, for he has done much to educate the people to the advantages of a telephone service free from Bell tyranny and to point out the way in which these advantages can be secured.

The result of the telephone campaign in Manitoba is the crowning tribute to Mr. Dagger's ability as an organizer and fighter for the people's rights in the matter of securing a reliable telephone service at fair rates. He reached Winnipeg in the middle of September last, or only three months before the date of taking the vote. Considering that there were 124 municipalities, spread over a vast area, to cover, and that Bell agents had been getting their work in six months earlier, his task was one which required conspicuous energy and good judgment, if the people were to receive that enlightenment which was necessary to enable them to record an intelligent vote. The vote on December 18, 1906, as given herewith, is an undoubted proof of the ability which Mr. Dagger displayed throughout the campaign and in congratulating him upon his success, we are confident that the future has greater triumphs in store for this intrepid fighter of a monopoly which, in Canada as in the United States, has displayed so much arrogance and greed during the past 26 years.

Standardization of Apparatus vs. Progress

Few people realize what dangerous ground they are treading upon when directing their thoughts and discussions along the lines of standardizing apparatus.

The Bell Company, before the advent of the Independents, had worked the standardization of apparatus game down to a fine point. They were able to standardize certain portions of their equipment for the simple reason that no other company was in a position to supply telephone apparatus to the operating companies.

The Bell scheme of standardizing apparatus worked very well until the Independent manufacturers, at the very beginning of their career, offered apparatus which was found superior in efficiency of operation to that produced by the Bell Company, thus forcing the Bell Company to improve its apparatus.

When the Independent companies came into the field the single pole receiver was the Bell standard. Within two years it was no longer their standard. The double pole receiver was adopted and is the only receiver which today is considered an efficient type.

Standardization of apparatus would never have brought about this condition. Perhaps even today, if there had been no Independent companies, the single pole receiver would be the standard.

Another standard piece of apparatus was the Blake transmitter. The Independents soon produced instruments far superior to the Blake and forced the Bell Company to abandon its standardization scheme and produce something at least equal to that being used by the Independent companies. How many people can say today that during the past year or two they have held a telephone conversation through an instrument equipped with Blake transmitters?

So much for standardization of receivers and transmitters.

Standardization knock-out No. 3 is one which the Bell Company has not yet gotten over. Thousands of dollars are being spent daily in replacing the old standard practice multiple switchboard, and who forces the issue, the advocates of standardization of apparatus or the advocates of improved methods and appliances?

It was the Independents who first saw the great advantages of common battery switchboards. And, again, it was the Independents who led in the general application of the common battery service, carrying with it lamp line signals, double cord supervision, and, incidentally, also producing an entirely different and more economical type of subscribers' telephone equipment.

Standardization of apparatus is undesirable of accomplishment by an operating company unless that company is satisfied and will continue to remain satisfied with the class of service rendered by the adopted standard of apparatus, even though a much better and more efficient class of apparatus may have been developed by diligent workers.

Standardization of apparatus should be dismissed as being undesirable, even if it can be accomplished, for standardization of apparatus means nothing but stagnation of progress.

Standardization of engineering is more susceptible to general adoption. It will determine some policy which should be followed by an operating company in handling

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local and long distance service. It is an engineering problem to decide whether all of the local exchange service shall be handled by automatic switchboards or whether it shall be handled by manually operated switchboards. This is a question of engineering. Engineering handles such questions as must be met in the handling of a local service—whether it should be done by trunking most of the connections, or whether it is more economical to construct large exchanges and make as many direct jack to jack connections as possible.

Standardization of engineering further determines what method should be adopted in construction of long distance lines. It will determine and fix upon a certain method of accomplishing certain results, but standardization of engineering does not mean the placing of any limitation on the adoption of the most efficient apparatus obtainable, for then telephone engineering must become a useless profession.

Standardization of practice is another question which may be discussed with safety and profit. Certain methods may be adopted for handling local business, and, most important of all, certain definite methods may be adopted for handling long distance connections, and therefore result in the most efficient method of handling traffic.

Standardization of apparatus, if adopted by a certain company means that that company will within a short time either be at the mercy of a manufacturer who alone possesses the right to manufacture the telephone company's standard apparatus, or that the operating company must become a back number from an efficient service standpoint.

Standardization of engineering when adopted by an operating company means that the company will not only save considerable money in the work of laying out new exchanges and installations, but that it will force the manufacturing companies to the necessity of maintaining the efficiency of their apparatus and producing more efficient appliances, as the demand for greater working margins may arise.

Standardization of practice when adopted by one or more companies means a substantial reduction in maintenance expense, through every employee of the company thoroughly understanding what should be done under every operating condition, when it should be done and how it must be done.

Finally the Independent operating company should understand that standardization of apparatus is a pet scheme of the Bell Company, and one which they would like to have the Independent companies adopt, and that standardization of engineering and practice, when intelligently applied, will make the Independent companies' row all the easier to hoe.

Old Telephone Litigation Ended

In a decision recently handed down, Judge Quarles, in the Federal court at Milwaukee, Wis., dismissed the bill in equity filed by the Continental Adjustment Co. of Chicago against Wallace P. Cook and other stockholders in the Cushman United Telephone Co., also of Chicago. The complaint was dismissed for lack of equity and also because of being defective as to the parties named as defendants.

It was during the arguments in this action that the early history of the telephone, as a commercial necessity, was rehearsed, together with a story of the bitter struggle which was fought between the rival claimants for the honor of being known as the inventor of the telephone—the struggle which finally resulted in the victory for the Bell Telephone Co. and which crowned Alexander Graham Bell as the inventor of the telephone.

As disclosed at the arguments before Judge Quarles, S. D. & I. M. Cushman were the real plaintiffs in the case, the Continental Adjustment Co. being merely a collection agency. The plaintiffs brought suit asking that the stockholders of the Cushman United Telephone Co. be assessed a sufficient sum to permit of the payment by the company of a judgment for $250,000 obtained by the Cushmans against the corporation bearing their name.

In the documents filed with the court during the hearing of the arguments, S. D. Cushman makes a claim to the effect that he, and he alone, was the real and original inventor of the telephone, having discovered the secret of transmitting conversation by wire in 1851. He alleged that he was at that time unable to perfect his invention and that before his invention was perfected for commercial purposes the patent office had issued letters patent for an instrument of the same nature to another inventor.

Despite this fact, Cushman asserted his right to exploit the product of his own brains, and in 1895 was instrumental in the formation of a corporation known as the Cushman United Telephone Co., having a capital stock of $20,000,000, all of which was issued, but for which $600 cash was paid in. This corporation is classed by Judge Quarles in his decision as being "unique" in that it practically never had any capital and might be said "to have merely capitalized an idea."

Following the formation of this corporation an agreement was entered into with W. P. Cook, of Oconto, for the manufacture of various telephone appliances upon the transfer to him of $5,000,000 worth of the stock in the company. The transfer was made and Cook, together with some of the other stockholders, expended upwards of $50,000 of his private funds in the manufacture of these appliances.

These instruments were later adjudged by the courts to be an intringement of the Bell patents and this brought about the collapse of the enterprise. Later Cushman brought suit and obtained judgment against the company for $250,000, and the object of the present action was to force Cook and certain of the other stockholders to pay enough into the company to permit the collection of this judgment.

Judge Quarles held that as Cook had never paid anything for his stock he cannot be held to be liable on the judgment and stated that as one of his reasons for dismissing the action.

Death of Arthur Vaughan Abbott

Arthur Vaughan Abbott, one of the most prominently known and esteemed engineers of this country, died from pneumonia, December 1, at St. Luke's Hospital, New York city, after a short illness. Mr. Abbott, who was a son of the late Benjamin Abbott, was born in New York city in 1854. He had been a member of the American Institute of Mining Engineers since 1882, vice-president of the American Institute of Electrical Engineers, and chief engineer of the Chicago Telephone Company and engineer of Westinghouse, Church, Kerr & Company since 1902. He wrote several books. Among his works are "Electrical Transmission of Energy," "The Evolution of a Switchboard," "History and Use of Testing Machines," "Treatise on Fuel" and "Telephony."

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Electrical Measurements by Voltmeter

By FRANK M. SLOUGH

Nearly all telephone exchanges of any size are realizing how important the accurate measurements of line trouble—of relay coils, ringer coils, etc.,—is, and how very often it saves much unnecessary trouble and expense. These measurements are usually made by the use of a voltmeter, mil-ammeter or Wheatstone bridge, in some form or other.

As most exchanges are equipped with a voltmeter for testing, it is the purpose of the writer to describe, briefly, how this instrument can be used for accurately measuring both high and low resistance.

INSULATION OF CABLE.

Suppose, for example, it is desired to measure the insulation resistance of a certain wire or pair of wires in a cable. The connections for making this kind of a test are shown in Fig. 1.

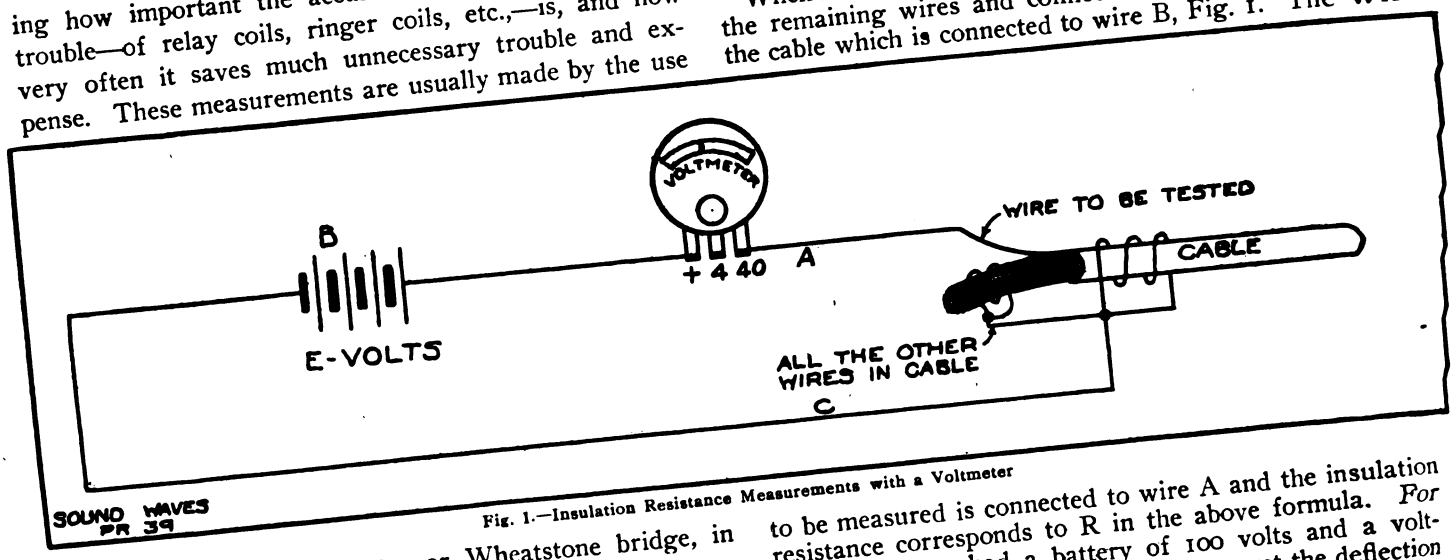

Fig. 1.—Insulation Resistance Measurements with a Voltmeter

When measuring a cable wire it is customary to "bunch" the remaining wires and connect them to the sheath of the cable which is connected to wire B, Fig. 1. The wire to be measured is connected to wire A and the insulation resistance corresponds to R in the above formula. For example, if we had a battery of 100 volts and a voltmeter of 18,000 ohms resistance and we get the deflection of two volts from the instrument, we can easily find the insulation resistance.

$$\text{Insulation Resistance } R = 18{,}000 \text{ Ohms} \left(\frac{100 \text{ V.}}{2 \text{ V.}} - 1 \right)$$

$$18{,}000 \text{ Ohms} \times (49) = 882{,}000 \text{ OHMS}$$

The - figure represents the voltmeter resistance which is thus subtracted from the total resistance.

In this case it shows the insulation to be very low

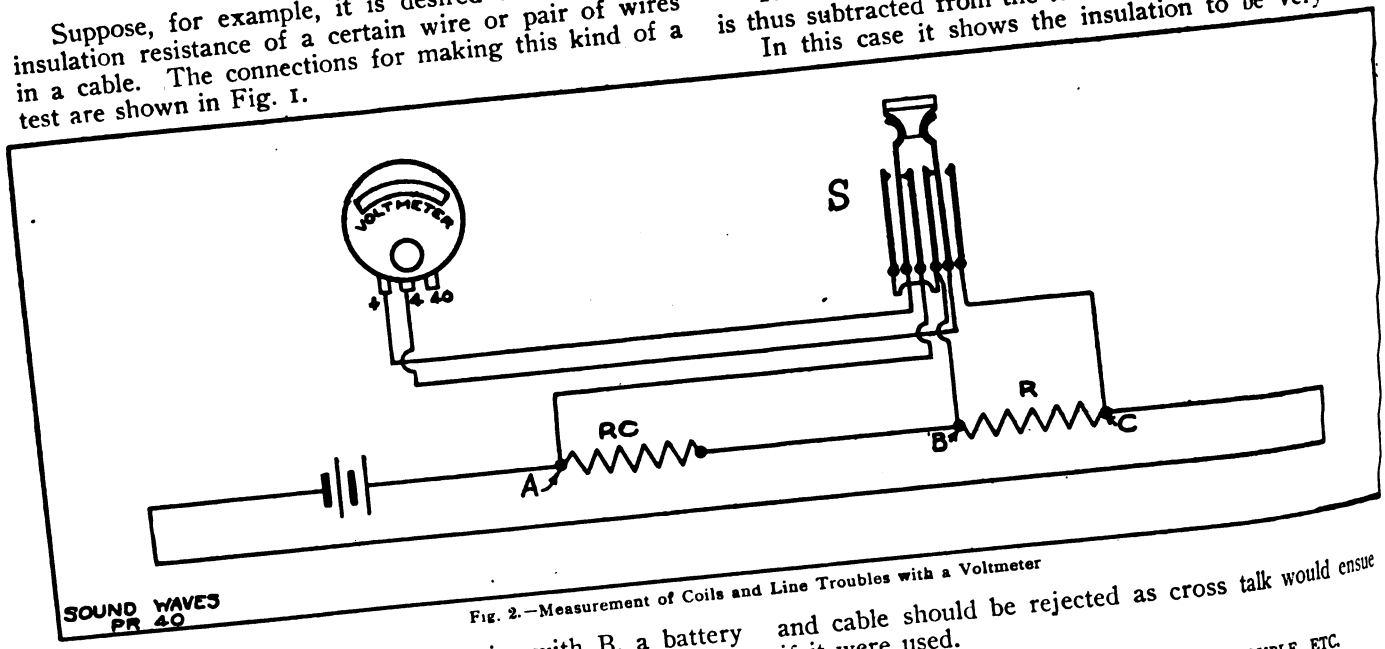

Fig. 2.—Measurement of Coils and Line Troubles with a Voltmeter

The voltmeter is shown in series with B, a battery or other source of direct current power. It is evident that a resistance placed across the wires A and C would produce a voltmeter deflection and it is evident that the higher the resistance, the less this deflection will be.

If the voltage of the battery is denoted by E, the resistance of the voltmeter, by RV, the resistance to be measured by K the value of R can be found.

$$R = RV \left(\frac{E}{\text{DEFLECTION}} - 1 \right)$$

and cable should be rejected as cross talk would ensue if it were used.

MEASUREMENTS OF COILS, LINE TROUBLE, ETC.

If it is desired to measure a lower resistance, such as line crosses, grounds, resistance of windings, etc., a somewhat different method is used such as shown in Fig. 2.

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B is a battery of about 4 volts, RC a standard resistance coil, say of 1,000 ohms, R the resistance to be measured, S a key or other switching device to successively place the voltmeter around RC and R, giving the deflections respectively of D and D^2. It is well to use the low scale of a voltmeter in making this test of low resistance and the high scale when making the foregoing test of high resistance.

$$R = \frac{RC \times D_2}{D}$$

For example, if RC equals 100 ohms and the voltmeter connected around RC gives the deflection D of 1 volt and the voltmeter connected around R gives a deflection of D^2 of three volts it follows that

$$R = 100 \text{ Ohms} \times 3 \text{ Ohms} = 300 \text{ Ohms}$$

which is the resistance of the coil or line under test.

It will be found that the best readings by this method will be made when the voltmeter needle stands near the middle of the scale, which is only possible when the resistance of the standard coil is near the resistance of the coil or resistance to be measured.

Michigan Managers Form Association

Fifty managers of Independent telephone companies operating in the state of Michigan met at Jackson in December and organized an association which will meet semi-annually hereafter. Papers will be read and topics of interest to practical telephone men discussed.

The following were elected officers for the first year: President, F. V. Newman, manager Citizens' Telephone Co., Grand Rapids; vice president, William J. Robinson, manager Citizens' Telephone Co., Muskegon; secretary-treasurer, H. T. Clough, manager Valley Telephone Co., Owosso. The officers, together with F. M. Howard, of Flint, and A. A. Burch, of Battle Creek, constitute the executive committee.

F. V. NEWMAN,
Manager Citizens' Telephone Co., Grand Rapids, Mich.

A number of interesting papers were read, among them the following production, the work of William J. Robinson, vice president of the association:

THE GOOD THIS ASSOCIATION MAY DO.

The committee on program, in assigning this topic to me, must have held a very exalted opinion of me and my ability to look into the future and foretell to you what is to come and the good to be accomplished by this association. They may be right, but I assure you that if I have that power I am not aware of it.

There is quite a number of ways where there is a possibility, if not a great probability, of this association doing good. But at this time I wish to call your attention to what this association is composed of—Independent telephone managers. The manager—Who is he?—What does he do?—What is he expected to do?—What does he have to contend with and why does he not do so and so and this and that?

The manager is generally some good, bright, upright, honest young man that his company has had with them for some time, and who took a great interest in his work and labored faithfully for the interest of his employers—working for their interests without any thought perhaps of any prospects of immediate promotion and unaware that he was serving an apprenticeship for the position of manager.

But he was being watched and an opportunity came for him to be promoted and his company concluded that he was the one that they wanted out at Stumpy Corners to look after their interests there, build up their business, increase the revenue and improve the service. So he is promoted from his former job and is placed in charge at Stumpy Corners.

There he is, away from his friends and associates—all alone you might say—with none of his superiors at hand to confide with or give their advice or counsel how to handle contingencies that may arise, of importance to him at least. No one with whom to converse upon the subject of most interest to him—Independent telephony—except perhaps his friend, the Bell man; and how does he keep himself posted on what Independent telephony is doing?

Does his general manager call him up and post him on what is taking place in the telephone world? Does the general manager write him a nice personal letter and post him on what his friend is doing down at Six Corners to get "farmer contracts," and say to him, "Hustle up a little, old man, and perhaps your exchange will outnumber Six Corners?" No. But the young man hustles just the same, improves the service, gets the contracts, and puts in the telephones.

And the first thing he knows his cable capacity is exhausted, his switchboard is full, his farmer lines are overloaded. What shall he do? He makes up his mind that the company will do their part and furnish what is necessary to continue the good work. So he communicates with the general manager, or the superintendent of construction, or the superintendent of equipment, and lays the matter before them—proud of his achievements.

How is he complimented upon his achievements? Generally in this manner: "What are you trying to do?

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What do you think this company is—a gold mine? Get along the best you can. We can't spend all of our money up there. Hustle up and get your collections in better shape so we will have plenty of money to pay the next dividend with and don't ask us for any more in the way of investment."

How is he going to hustle up his collections? Can he get "blood out of a turnip?" No, he thinks he can't, but he may have the pleasure of attending those meetings and ask questions of those who get "blood out of a turnip," and they tell him how it is done.

And his friend from Six Corners, who was shooting trouble at the same time he was and who could not make a telephone talk when he had both zincs of the batteries connected together and was helped out by him, can tell how he handled this man or that man and got him to pay his rental in advance instead of arrears, and his toll bills on presentation.

He can meet Jones from Smith's Corners who is with that other company that insists on checking a higher rate than the rate he quoted, and there is Brown from over the other way, who insists upon checking up every minute or a fraction of a minute on all incoming calls, and White who sends reverse calls to your office without informing your operator that they are reverse calls; and tell each other the error of their ways and perhaps they will try and be more careful and possibly some of these errors we all like so well will be obviated.

Then there are other topics that will be brought up and discussed, and he will hear from both sides. He will hear how this one or that one did this or that and got those fellows out there to pay a higher rate for something they thought they would get, but didn't. He will perhaps hear what is the proper way to protect his lines and instruments against lightning. He will hear how to cut a copper line for the purpose of making a test to locate trouble and put it back in its original condition without making a joint.

He will hear perhaps how other people build lines and what is the proper way to conduct them so that the rural subscriber is satisfied and thinks he is getting the worth of his money, and how he can get his subscribers to use the toll lines more; and the value of discipline—how much and how little is for the best good of all, and the conduct and personal appearance of employees—compare your opinions with those of others.

Then there are troubles that we have. We all have them. Not only with the switchboard, but with cables, lines, instruments, subscribers, neighboring offices and non-subscribers. What can we do with them? Hadn't we better talk about them? And we even have some trouble with the weather—Wednesday, November 21, and Wednesday, December 5.

And what good will this association do you? It will do you a great deal of good if you come here with the determination to get good out of it and enter into the discussions and let us hear from you, for we want you all to feel that it is your opinion that we want, for the most of the time is to be devoted to discussions.

And while you are here you must not think that you are out for a good time or any personal benefits but for the purpose of gaining some knowledge or getting some good ideas or suggestions that can be carried home with you and made good use of in the interest of your company and Independent telephony.

Let us all strive to make these meetings a success and see how much benefit may be derived from promoting a better harmony among Independent telephone workers that will elevate Independent telephony to a higher standard and as near perfection as possible.

First Nebraska District Meeting

An enjoyable and profitable meeting was held in December by the members of the first district of the Nebraska Independent Telephone Association, at Kearney, Neb. Among those present were Warren Pratt and W. J. Stadlemann, of Kearney; Joseph Carlos, Hastings; W. J. Smith, Shelton; R. E. Mattison, Lincoln, and E. C. Krewson, Elmcreek. Mr. Mattison spoke on the toll clearing feature of the state association and advocated the publication of a state directory. His remarks were well received by the delegates.

The following officers were elected for the ensuing term: President, Dr. J. H. Lyman, Hastings; vice president, Fred W. Ashton, Grand Island; secretary and treasurer, E. C. Krewson, Elmcreek.

The companies represented at the meeting control about 8,000 telephones and an investment of local capital amounting to $449,000, 480 miles of toll lines and 3,600 miles of rural lines, besides the city systems. A copper toll line is now bing constructed between Kearney and Hastings, via Kenesaw, which will give copper connections to Hastings, Lincoln, South Omaha, Council Bluffs and intermediate points.

W. J. Stadlemann, whose resignation as manager of the Kearney Telephone Co. took effect on the first of the year, and who has just retired from the presidency of the district association, has left for a two years' trip around the globe as advertising representative for American telephone manufacturers. He is accompanied by his family. Mr. Stadlemann is a capable, hustling, aggressive man and took a prominent part in building up the Kearney system, the stock of which is now considered a choice local investment. The best wishes of his former associates and colleagues go with Mr. Stadlemann on his journeys abroad.

Ft. Wayne Company Doing Well

The Home Telegraph and Telephone Co., Ft. Wayne, Ind., which was organized in 1896 and consequently is one of the oldest Independent companies in existence, recently closed one of the most successful years in its history. It started with a few hundred subscribers and now has more than 4,000 in Ft. Wayne alone, with prosperous exchanges at Auburn, Kendallville, New Haven and Sturgis, and farmer lines which practically cover every highway leading out of the city. The toll business for 1906 showed an increase of 30 per cent over the previous year. A new toll board was installed at the Ft. Wayne exchange, at a cost of $5,000. Much of the company's success is due to the untiring and intelligent effort of Wm. L. Moellering, general manager and secretary of the company.

Independent Service Preferred

The Business Men's Association of Napersville, Ill., held a meeting not long ago to discuss the local telephone situation. The Bell Company, which charges the same business rates as the Independent company, was raked over the coals, and it was decided to vote on a proposition to dispense with one or the other service. The decision was in favor of the Independent company's service.

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Telephone Poles of the Philippines

By Ex-SOLDIER

Since my return from the Philippine islands, I have been asked many questions concerning the telephone system and development of the city of Manila and other localities in the islands where the telephone has been introduced.

WIRES IN CLOSE PROXIMITY TO FOLIAGE

The Spanish had their telephone lines in operation years before the Americans took possession of the country. But the Spanish telephone industry was very different. Only a few of the government officials, and important natives and business houses were privileged to have a telephone instrument. The average business man was not encouraged to put in a telephone. No one took any special interest in the lines or offices. Neglect was everywhere in evidence. There were no hustling agents out among the planters, the bankers, the furniture manufacturers, the cigar factory operators, the hotels and private dwellings as now, for the purpose of drumming up business.

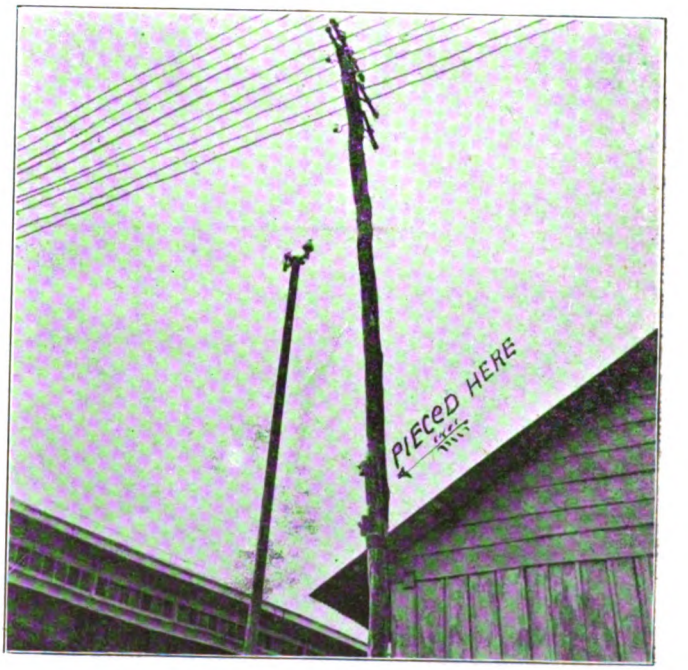
Nowadays, as soon as a man opens an industrial or commercial establishment, the telephone men present to him the advantages of the telephone, and oftentimes he permits the instrument to be put in on trial. It is to the credit of the native business man that he seldom allows the instrument to be removed after it is once installed.

Prices are fixed at reasonable rates and the business man is well able to afford the use of the telephone. The result is that the telephone is being quite freely installed throughout the important commercial centers of the islands. This phase of the telephone business has been frequently touched upon, and Americans are quite well aware of the fact that the business is on the road to success.

In connection with the successful introduction of the American telephone system in the Philippine islands, we notice some factors which may interest builders and dealers in instruments, poles and general telephone supplies.

Pole manufacturers have inquired about the type of poles employed in the islands. The lumber interests of the Philippine islands differ quite materially from the lumber interests of the average country. For illustration, Providence has particularly favored the islands with large growths of rich hard woods. The result is that instead of the famous cedar pole for telephone lines you will see mahogany, walnut and kindred hard fibered woods. There are superior piano top logs left in the forests by the wasteful natives to decay. When the natives cut poles, they select straight and desirable logs and waste vast quantities of valuable timber in getting the same. They do not know the worth of the lumber. My business in the islands was with the signal corps, and I noticed much fine ebony and like wood rotting alongside the military roads cut through dense forests for military purposes. We would put up our temporary line of communication as we advanced, using lumber in the poles which would bring good prices in America. We annex a number of photographs of telephone and telegraph wire poles used in Manila and vicinity. Often the wires of both telephone and telegraph are on the same cross arms. The native telephone linemen have a habit of combining two or three poles into one. Necessarily, the poles must be unusually well fixed in the ground, and securely braced, because of typhoons.

There are no frosts to gather on the wires and pull the poles over. But there are severe gales of wind and floods to undermine the poles and frequently the pole is sprung out of line. The natives are also accustomed to put many arms on some of the poles. After they get a pole liberally decorated with arms they proceed to add to the strength of the combination by installing a mate for the pole and extending the arms from one to the



PIECED POLES ARE OFTEN SEEN

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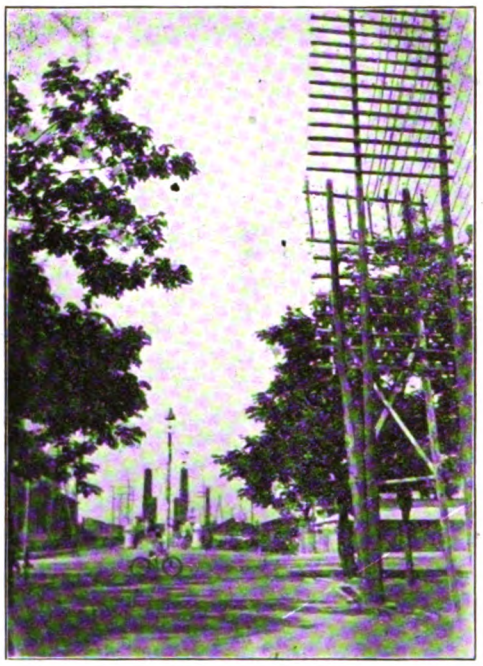
other. Not infrequently as many as three and four poles are thus put into one supporting factor.

The average pole is exceedingly heavy, as might be expected under the conditions. Unfortunately there are practically no growths of wood kindred to the excellent



METHOD OF INSTALLING CROSS ARMS

cedar, although there are several species which resemble it in some ways. Hence, the telephone lineman of Manila is obliged to resort to the hardwoods for poles.

He uses the strong caribou animal to haul the logs, one at a time, to the place of adjustment. Deep holes

TWO POLES ARE STRONGER THAN ONE

are cut, and a day and sometimes two days are devoted to getting the giant hardwood pole up and in position. There is one good thing about it. After the pole is once correctly set, it is likely to stand indefinitely, providing the busy little white ants do not take a notion to make their house at the bottom. If a swarm of these sharp-jawed insects make a beginning in the base of the pole, the finish of the pole will come with the next high wind. These white ants chew and eat the wood fibre with remarkable rapidity. The natives try to protect the underground part of the pole with sheet-metal covers, cement, etc., but the ants always manage to find a crack to enter.

There is a species of red wood in the islands that has been used with fairly good results in late years for telephone service. I noticed this wood in poles and cross arms.

One element that bothers the native telephone lineman is the dense foliage through which much of the line often passes, and particularly if the line runs out to the provinces. The native lineman is aware that perfect insulation is needed, and he tries to keep away from trees, palms, etc. But he is not always successful. He may trim the foliage only to have it grow up to the lines again in a short while. In fact, he interfering foliage is one of the bothersome elements of the provinces, and oftentimes right in Manila, I noticed instances in which unusually high poles were employed and upon asking the reason for the additional height was told that this was done to get the wires above the line of growth of foliage at all times.

The usual setting of forty poles to the mile is not observed by the native lineman. He puts up his pole where he thinks it is needed. Hence, in traveling over a military road where the natives had put in poles, I noticed that some of the poles were too far apart, and others decidedly too near together

Judge Traps Telephone Slanderer

Judge Miller, a well-known jurist of Springfield, O., was treated to a novel surprise one evening just before Christmas. The telephone bell rang and the judge answered it. He was somewhat surprised when someone at the other end of the line commenced calling him all kinds of names. Judge Miller waited until the man had hung up the receiver and then called up central and kindly asked her to tell him the number that had just called up. The operator had remembered the number and gave the judge the information desired. Hastily dressing the judge moved down that way when he found that the call was from Bernstein's saloon on East Main street. When he reached the place he found the man who had been using the 'phone, and ran across Detectives Jones and Musselman on the way down. The man was still in the saloon and was locked up charged with being drunk and disorderly, giving his name as Samuel Parker.

Uses Automatic Trunk Line Switches

The Ohio River Telephone Co., whose headquarters are located at Rising Sun, Ind., has recently improved its system in a substantial manner. A No. 10 copper circuit is now being strung to connect with Carrollton, Ky., and 80 miles of No. 10 copper have already been strung to connect with Madison, Ind. A metallic circuit, 30 miles long, has been completed, connecting Rising Sun and Vevay, Ind. For handling country subscribers the company uses automatic trunk line switches. These are placed at the junctions of lines, 5 to 12 miles or farther out in the country. By their aid one trunk line will care for three or four branch lines, one circuit doing the work of two.

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The One-hundred Thousand Ohm Telephone

BY H. P. CLAUSEN

It is only the careless and uninformed salesman who will use the argument that the telephone which he offers for sale can be gauged by the expression "so many thousand ohms." In other words, the idea seems to have become current that when a purchaser is offered a telephone, called, for example, a "10,000 ohm instrument," it is not so valuable an instrument, or perhaps as powerful an instrument, as the telephone may be which goes under

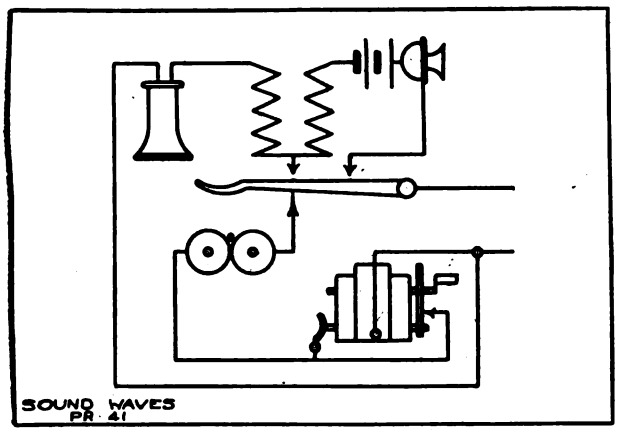

Fig. 1.—Series Telephone Circuit

the name of "20,000 ohm instrument," and it is for the purpose of showing that such expressions mean absolutely nothing that the writer has prepared these few remarks.

In the first place, a telephone of the series type, as shown by Fig. 1, has the usual transmitter, receiver, induction coil and battery equipment, and for the signaling mechanism has a ringer and generator. When the generator is driven, while the subscriber is projecting a signaling current over the line, such current as is generated must pass through the series ringer. As a rule, the series ringer is wound to resistance of 100 ohms; and, as applied to a telephone of this kind, the expression "10,000 ohm telephone" might be based on some foundation of facts, i. e., connect a resistance of 10,000 ohms to the line terminals of the telephone, drive the generator at a certain speed, and you will be able to vibrate the armature and the tapper of the ringer. This then is what we mean by a "10,000 ohm" equipment; viz., you will be able to ring the bell on your telephone through a resistance of 10,000 ohms, while driving the local telephone generator.

Now it is well known that the sensitiveness of a ringer depends on the number of turns of wire on the ringer magnets and on the voltage of the generator. Obviously, if the ringer has a certain sensitiveness; then, with a certain voltage delivered by the generator, the ringer will respond through a certain resistance. So much for a series telephone.

Now when the uninformed, or, should we say, unscrupulous, salesman commences to offer bridging telephones at so much per 1,000 ohms his offer should be investigated with great care, for reasons which will appear below:

Referring to Fig. 2, we have a bridging telephone. In this instrument it will be observed we have the usual equipment of transmitting and receiving apparatus, and in addition to this we have the generator and ringer, but instead of connecting the ringer in series with the generator we now connect it in bridge. In other words, no matter whether you have telephones connected to a line or whether you leave the line wires entirely disconnected from your telephone, the current generated while driving the local generator must pass through the bridging ringer; and, with a ringer of a certain resistance the current which passes through this ringer will be of a constant quantity so long as the voltage of the generator remains constant.

So, then, if we accept for a moment our salesman's suggestion that his telephone is of the 100,000 ohm type, let us connect a 100,000 ohm resistance to the line terminals of the telephone, and certainly we shall find that the telephone gives an excellent ring. Not because we have added the 100,000 ohm line resistance, but because the ringer would have responded even though we had connected two or three 100,000 ohms in the line circuit, and even gone beyond this and left the line circuit open altogether, which, in an ordinary telephone, would represent something like 20 or 30 million ohms resistance, so why should our friend stop at 100,000 ohms? He might as well have made it 1,000,000 ohms, and possibly made a better impression.

Obviously, then, connecting a high resistance to the bridging telephone will not in the slightest degree convey any idea as to the electrical qualities of the instrument. Now let us connect a lower resistance to the telephone, say 100 ohms, and when this is done we find that the bell no longer responds as well as it should,

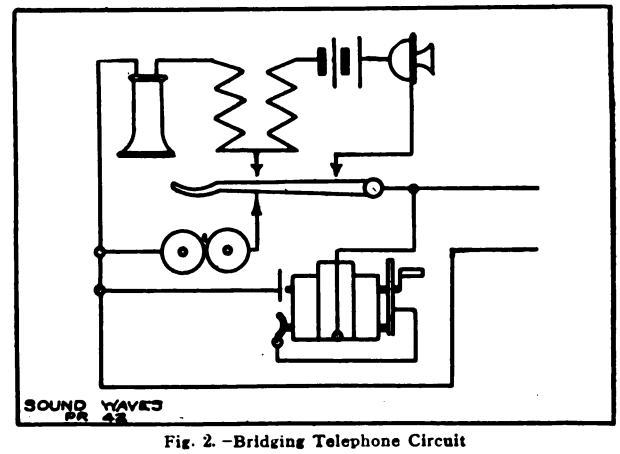

Fig. 2.—Bridging Telephone Circuit

and we have only added 100 ohms to the line. Naturally, if the telephone is of 100,000 ohm type and possesses virtues claimed for it, for that reason, by the salesman, then surely when we connect a less resistance than 100,000 ohms to the telephone it should operate still more satisfactorily, but as it appears to work just opposite to the above, is it not perfectly reasonable that when one purchases a bridging telephone he should insist that the telephone must ring its own bell satisfactorily when an exceedingly low resistance is connected to the telephone line binding posts? In other words, would it not appear more reasonable to purchase a telephone for which a claim is made that it will ring its own bell through a lower resistance than can be done by any other tele-

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phone? That is, when purchasing a bridging telephone, do not ask how many 100,000 ohms it may be best to determine the lowest possible resistance which may be connected across the telephone line wires and still permit of the telephone ringer being operated while driving the generator. However, the only proper test for a bridging telephone is to have two instruments and arrange them so that you may signal instrument No. 2 from the instrument No. 1 by turning the crank of the magneto generator.

Upon setting up this test, as shown by Fig. 3, the wire connecting the two telephones, of course, represents the line circuit, and in order to produce line conditions as nearly as possible let us add a resistance at X. Say we add 2,000 ohms. It will now be found that the B ringer still responds, while driving the A station generator. However, it will be observed that we have only one telephone connected across this line wire and, in order to more closely produce line conditions, let us connect at point S a shunt resistance of an adjustable type. Say, as a first test, we make the resistance 500 ohms. Now with the 2,000 ohms inserted at X, notice how much weaker the signal comes in at B. And also notice that when you connect a condenser across the line at K that it will further reduce the power of the signal received at B, and when we increase the resistance of X it is perfectly obvious that the power of the ringer at B must be still further decreased. Now then, from the above we have observed that when X represents the line resistance, S the different telephones connected across the line and K the electro-static capacity of the line, when we increase X and K and decrease S while projecting current from the station A the ringer at station B is decreasingly responsive to the current generated at A. That is to say, when you increase X and decrease S the station B responds less satisfactorily. Further, when you increase K, the capacity of the line—the ring received at B—is less powerful; and, further, when we decrease S (which amounts to the same thing as adding telephones) we still further decrease the power of the ringer B. Thus it will be observed that at no stage of the above experiments have we found any place for the expression "100,000 ohm telephone" while making the test. One might say that the expression "100,000 ohm telephone" might be supplied when the generator at station A is made of suitable construction for generating a sufficiently high voltage so that the ringer B would respond when X is increased to 100,000 ohms.

Allowing this assumption to stand for the moment, let us now connect the shunt of 100 ohms at S and make the capacity K 4 m. f.; then the telephone generator which it would be necessary to install in the A telephone would be quite a curiosity, but scarcely of an acceptable character.

In conclusion, therefore, beware of the expression "100,000 ohm telephone," when purchasing a bridging instrument. Rather specify that the telephone shall be of such a construction as to permit of signaling telephone B through a certain resistance X, while driving the generator at A and while a certain low resistance shunt is placed at S, and if you desire to be still more exact require that in addition to the resistance X and S a capacity K must be bridged across the line.

The writer does not consider it advisable to give any values to the X, S and R elements, but suggests that the interested purchaser remove from one of his

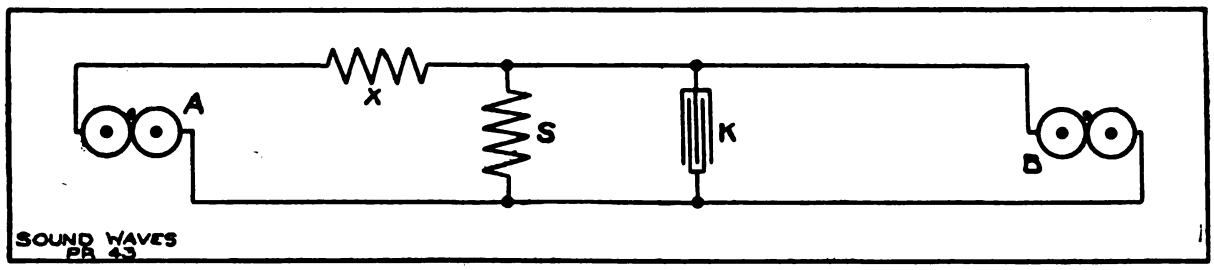

Fig. 8.—Bridging Telephone Test Circuit

long lines, on which many telephones are connected, two of the instruments, preferably the two which are located at the opposite extremities of the line. Be sure that these two telephones are now giving first-class service; i. e., while you ring from telephone A telephone B responds, as well as the remaining telephones on the line. While ringing from telephone B all telephone bells, including that of the telephone A, should respond. This gives you a satisfactory standard to work from. You are satisfied that when all instruments you are to purchase will operate as well as the two specimens which you have been operating for some time your results will be satisfactory.

Now, then, take the two specimen instruments, connect them as shown in Fig. 3, and vary the resistance X in any manner you prefer; but, as a rule, resistance X should be equal to the longest line over which you may be required to signal with the telephone. Say your longest line measures about 2,000 ohms. Make X about 25 per cent. higher; i. e., 2,500 ohms, drive the generator at A and note that B responds. Connect resistance S and make it as low as you can and still permit of the bell B responding satisfactorily. Add the capacity K, if you wish, although this is almost negligible unless you have sufficiently long lines or considerable cable to go through, in which case capacity K should be connected on the B side of the test circuit.

It is further important that in order to test the ringing qualities of the B telephone, the B and A telephones be made to change places; i. e., the signaling current must first pass through the resistance X before it reaches the signal receiving telephone and the resistance S and capacity K.

With the above test circuit the prospective purchaser is equipped with excellent means for determining what qualities a telephone offered him may possess. He can take the sample telephone, whether it is 100,000 ohms of 100,000,000 ohms, depending on the party offering the instrument, and place it in the position of his telephone A, and, upon driving the generator of his sample telephone, he will immediately be able to determine whether the instrument submitted is equal to his standard instrument by noting whether the bell at B responds

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more or less strongly, and, in order to test the ringer of the telephone offered, places the instrument at position B and rings toward the telephone from station A after having replaced the standard instrument.

Now it will be easily determined whether the ringer of the telephone offered is as satisfactory as the ringer of the standard telephone, and while making this test do not lose sight of the fact that the resistance of the ringer of the telephone offered should be equal to the resistance of the ringers of your standard, as it would not be good practice to install on your existing line circuits telephones equipped with ringers of a resistance differing from the ringer in the telephones already connected to the circuit.

Experiments with Wireless Telephony

One of the greatest advances in wireless telephony made in recent times has been brought through the discovery made by the Danish Edison, Valdemar Poulson. Mr. Poulson discovered that when the arc of an oscillation circuit is surrounded by hydrogen, it is possible to pro-

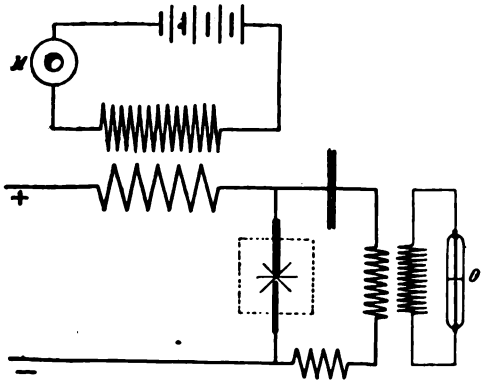

Fig. 1

duce a sustained oscillating current for long periods of time. In fact, if we take the Elihu Thomson U. S. patent, 500,630, July 4, '93, and surround the spark gap with hydrogen, it is found that an undamped source of oscillating current is produced at an exceedingly high frequency.

Upon the publication of Mr. Poulson's extraordinarily successful experiments in wireless telegraphy, Mr. Ernst Ruhmer, of Berlin, immediately appreciated the fact that

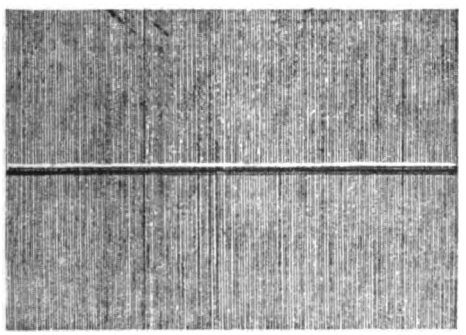

Fig. 2

with a source of undamped electric oscillation available, wireless telephony was solved, and that it merely remained a matter of detail for devising the necessary appliance for permitting telephone communication without wires between widely separated points, and Mr. Ruhmer, who has already carried on extensive experiments in wireless telephony by means of the arc lamp and selenium cell, publishes in the November 15 issue of the "Elektrotechnische Zeitschrift" the results of his experiments with the undamped, high frequency currents.

After first setting up an arrangement similar to Fig. 1, supplying the plus and minus terminals of the arrangement with current from a 220 volt circuit, the arc burns with a steady flame at a frequency of approximately 300,000 per second. On connecting the oscillograph tube O in the secondary circuit of a transformer, placed in the oscillation circuit, it was found that even though the light produced at O was reflected by a rotating mirror (driven at 140 R. P. M.) it was impossible to obtain any figure which recorded the frequency of the oscillating current. This indicated that the oscillations were found too high for permitting this rapidly rotating mirror to record them.

Fig. 2 shows a photographic image of the rotating mirror, from which it will be observed that the white line appears perfectly straight, as though the lamp had been supplied by a direct current. However, taking the arrangement as shown by Fig. 1 and speaking into the transmitter M the source of current supplied to the oscillating circuit was varied in accordance with the variation of the microphone contact with the result that the intensity of the arc at O was increased, or decreased, in

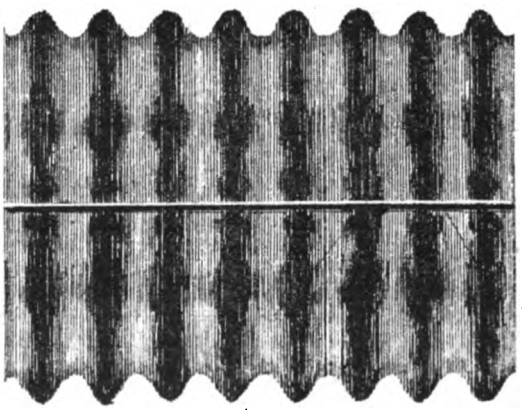

Fig. 3

proportion to the variations of the current in the primary source of supply.

As evidence of this variation, reference is made to Fig. 3. This shows a rotating mirror record while sounding the vowel "o" into the transmitter M.

Thus it will be observed that the variations in the transmitted resistance were carried over from the primary source of supply and caused a variation either in the strength or in the frequency of the oscillating current in the oscillation circuit.

After having determined these points through experiments, Mr. Ruhmer set up the circuit shown by Fig. 4, which is virtually the same as that shown by Fig. 1, excepting that the oscillation tube is replaced by a wire extended upwards in the air. Now, while operating the arrangement by speaking into the transmitter M, the same oscillations occur in the circuit, and these oscillations are projected into space as waves in the ether.

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Now referring to Fig. 5, this shows the receiving end of the wireless telephone system. Again, we have the wire extending up into the air, and suitable contact mechanism for varying the inductance of the antennae. It will further be observed that the contact maker connects to the earth through the electrolytic cell S., in mul-

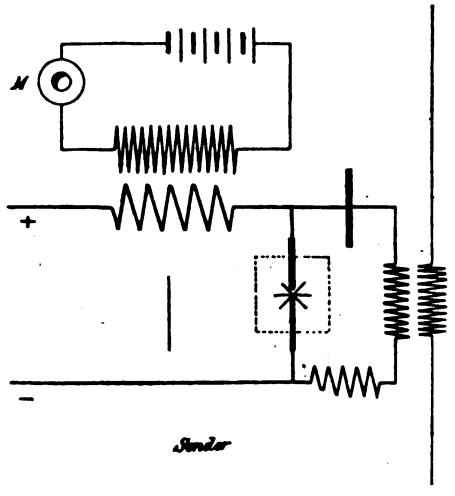

Fig. 4

tiple with which we have a condenser, and also the telephone T, and its battery O connected to the earth as shown. This receiving station equipment and in fact, the transmitting station equipment as well, is of the simplest type, and with the arrangement, as shown, Mr. Ruhmer made some preliminary experiments, among some of which was one in which the antennae was only about 5 feet in length. With this arrangement it is possible to carry on a conversation which was heard perfectly clear, and was very loud after separating the transmitting and receiving stations somewhat over 100 feet from each other.

In connection with Mr. Ruhmer's experiments which were carried on before November 15, 1906, attention is

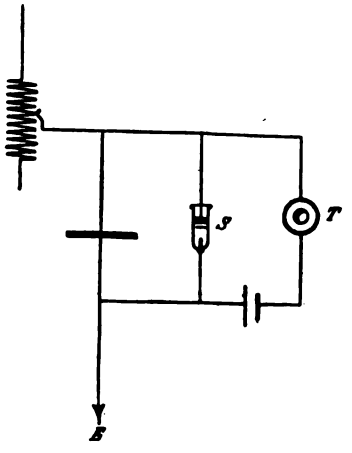

Fig. 5

drawn to a December 14th note, which states that the German Society of Wireless Telegraphy has succeeded in holding wireless telephone communication between Berlin and Nauen, 24 miles away, Prof. Slaby describing the experiment as entirely successful.

Prof. Slaby says that the problem of wireless telephony is solved, but that the limit of distance is not yet known, and he sees no reason to set any limit, believing that the time is coming when a man will be able to speak clearly with a friend in any part of the world.

The method employed today consists of the use of the microphone in connection with the ordinary wireless telegraph apparatus.

Slander by the Telephone Route.

Seldom has a legal decision caused so much popular excitement as the recent ruling of the Austrian supreme court that conversation over a telephone is to be regarded as speaking in public, because it might be overheard by a third party. The judgment was given in connection with one of those "Ehrenbeleidigung," or slander cases, which are every day occurrences in that country. Speaking through the telephone, a man called the cashier of a bathing establishment "an impudent person," and was promptly hauled up for "Ehrenbeleidigung" and compelled to pay a fine. He appealed against the decision, saying that the remark was made in private, but the court of appeals held it was not so, because the telephone operator or some other person might have overheard it. So much interest was aroused over this decision that the minister of commerce, Dr. Forscht, himself made a personal inspection of the chief telephone office to see to what extent the telephone employes were likely to overhear conversations going on between the subscribers. The minister has now issued a stringent general order forbidding the employes to listen to conversations over the wires, and reminding them that in such cases where it is impossible for them to avoid overhearing such talk it must be regarded as "service secrets," which all officials and operators are solemnly pledged to observe.

Farmers Want No Bell Connection

After a month's trial the Farmers' Telephone Co. of Pullman, Wash., has decided it will not join fortunes with the Pacific States Telephone & Telegraph company. The Pacific States had been trying to induce the patrons of the Farmers' line to connect with its line, but the proposition was rejected by the stockholders. A proposition was then made that the two central stations would be connected for a month in order to give the patrons of both lines an opportunity to learn what consolidation would mean to them. This was done for a month, and it has been possible for a patron of either line to converse with a patron on the other line in Pullman and vicinity without extra charge. At the expiration of the month's trial the two central stations were disconnected by mutual consent and will be operated as before the temporary connection was made.

Telephone Saved Him Lots of Money

A writer in the Chicago Tribune tells of a cattle buyer who drove into the yard of a farmer about fifty miles from Chicago the other day and made an offer for all the cattle and pigs on hand, delivery to be made at once. The offer seemed a good one, but before closing the farmer said he would speak to his wife. Going to the house he asked his wife to call up a Chicago commission house by telephone. In less than two minutes he was in communication with Chicago and was informed of a rise in prices and advised what a good offer would be at that moment. Within five minutes he closed a deal with the buyer at prices which paid him $300 more than the first offer.

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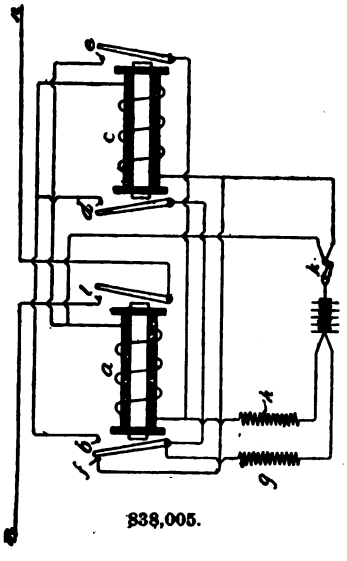
Recent Telephone Patents

837,440. Receiving Device for Bond Detectors.—Watson.

Street railway rails are required to be bonded together so as to reduce the electrical resistance at the joints to a minimum. This invention is aimed at providing a means for permitting the electrical conductivity of a rail joint to be determined. It consists of a device through which the primary winding of a specially constructed telephone receiver is connected across the joint so that any current which may be flowing from rail to rail through this special measuring device, acts on the primary winding of the telephone receiver. Around the primary there is a secondary winding and this is connected to the ordinary telephone receiver magnets and the functions of the device are to the effect that a current flowing through the primary causes a higher potential current to flow through the secondary and consequently effects the receiver diaphragm more strongly owing to the secondary current flowing through the wire wound on the receiver coils.

838,005. Electrical Circuit Interrupter.—Bullard & Matthies.

This is an arrangement of 2 relays provided with back and front contacts suitably connected so that when set in operation a see-saw arrangement is produced; i. e., relay



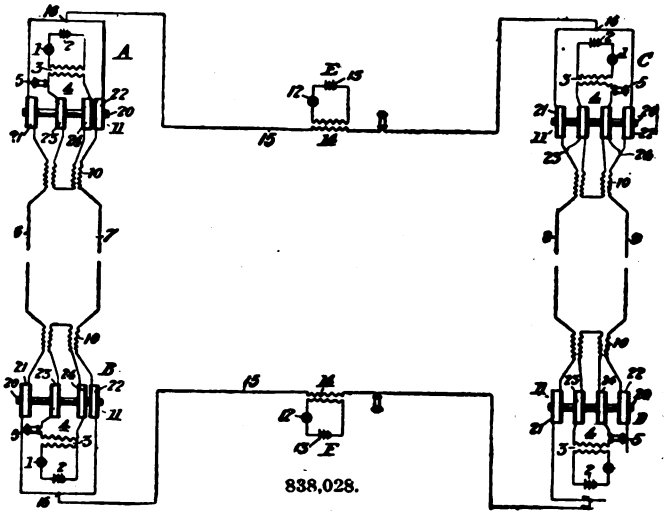
838,005.

A draws up its armature and causes relay C to do likewise. When relay C draws up its armature relay A is rendered inoperative, producing a reciprocating movement. The relay cores are copper-clad so as to make the action as sluggish as possible. This arrangement then provides means for a slow intermittent interruption of a source of busy signal current. The interruptions are provided for the purpose of preventing any mistake in understanding whether one hears the busy back signal or simply hears inductive noises from electric light or other disturbing currents.

838,028. Phantom Telephone System.—Jordan.

It is a well-known fact that the operation of phantom telephone systems is accompanied by considerable difficulty in maintaining perfect freedom from cross talk between the phantom and the line on which it is superposed as well as keeping the lines themselves clear from interference.

The general practice is to bring the wires of the balancing coils together at the point where the phantom cir-



838,028.

cuit connects to the metallic circuit. In the present invention, instead of bringing these balancing coil wires direct to the phantom circuit, they are brought through a coil of wire wound on separate spools, and the telephones of the original circuit are connected to windings inductively placed to the main line. That is to say, the main line connects to the phantom line through primary windings of a repeating coil and through the special spools of wire. The telephone connected to the metallic line connects to the secondary winding of a repeating coil through 2 separate spools of wire inductively placed toward the first named spools of wire. This then permits of shifting the wire spools toward each other for the purpose of balancing the currents against each other so that any lack of balanced condition of the line circuit may be compensated. The illustration shows how this is accomplished. The 4 balancing coils, it may be mentioned, are mounted on a suitable support so that the balancing coils may be readily slid from side to side.

838,304. Lightning Arrestor.—Cook.

The old style lightning arrestor has mica separating disks between the carbon and generally only one hole in the center of the mica for the purpose of permitting a discharge to heat up the wax which holds a lead ball in position in one of the carbons. This would happen on a heavy discharge and the moment that the ball loosened it rolled down between the two carbons and effectually grounded the circuit.

In the present invention, however, instead of using the lead ball in one of the carbons, the mica separator is done away with and a celluloid separator inserted. This celluloid separator is then melted on the application of considerable heat and causes the two carbons to come together and ground the circuit effectively without the lead balls. It will be observed that the lead ball arrangement was used so that the lines might be grounded on the passage of a heavy discharge and that the present invention

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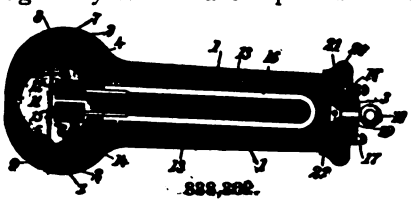
is an arrangement with a substance between the carbons which will melt and allow the carbons to come together upon the passage of a heavy discharge.

838,362. Receiver for Telephones.—Steinberger.

Many different forms of telephone receiver have been invented. This particular type is a combination of imbedding the magnet system in a compound for the purpose

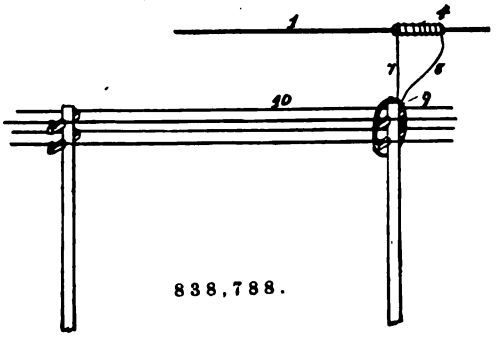


of preventing the evil effect of contraction and expansion. Another feature of this invention is that the entire case is surrounded by a metal retaining cup, this metal casing to be completely insulated from the magnets and the circuits.

Another feature of the invention is that the diaphragm is placed in the center of a hemispherical space. The receiver ear piece or cap of the receiver containing a hollow space conforming to the shape of the space surrounding the receiver magnet. It is claimed that this form of construction improves the accoustic qualities of the telephone.

838,788. Electric Transmission of Intelligence.—Kitsee.

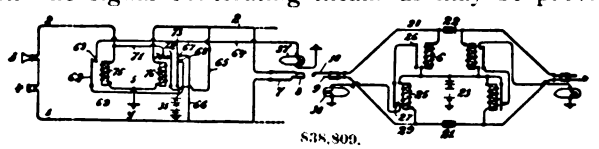
When telephone wires are placed on the same pole line together with power wires, it generally results in producing inductive disturbances in the telephone lines.



This invention is aimed at reducing the disturbances by generating counter disturbances from the power wires. In other words, with a given disturbance from the power lead and a means for opposing this disturbance by suitably connected coils inductively disposed toward the power wires and telephone wires, it is possible to counteract the effect of the disturbing current. Obviously the success of a system of this kind depends upon all conditions of insulation and capacity remaining unchanged after the inductive coils have been adjusted properly toward each other.

838,809. Telephone System with Central Battery.—Piltz.

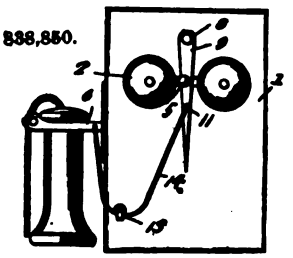
In all common battery systems of the two wire type such line signal obliterating means as may be provided



must be of a character which must permit of the signal obliterating means being used as a current supply medium to the subscriber's telephone transmitter. This invention has the sleeve side of the line circuit provided with two relays. One relay connects with the sleeve of the spring jack. This is the cut-off relay. The remaining relay connects to the line wires and operates the line signal. When the subscriber moves his receiver from the hook switch the line signal relay is energized and upon the operator placing a switching plug into the spring jack the cut-off relay is energized from the current supply over the sleeve side of the cord circuit. This energizes the cut-off relay and results in tying the line wire and the spring jack wire together. The tip side of the line is supplied with current from the cord circuit through suitably disposed relays. Obviously the sleeve relay of the cord circuit is provided with a front contact so as to light the supervisory lamp, and the tip relay on drawing up its back contact armature when the subscriber responds, causes the supervisory lamp to be extinguished.

838,850. Automatic Call Indicator for Telephones.—Denton & Nazor.

This is an arrangement in which an indicating arm is so placed in relation to the bell hammer of a telephone



ringer that a movement of the hammer presses the indicator to one side. This, then, serves as an indication that someone has called while the subscriber was absent, and when the subscriber returns he is in a position to "call down" the operator because she does not remember who called for him. The indicator is so arranged that when the receiver is removed from the hook switch a string or cord attached to the switch lever draws the indicator back into its central or non-indicating position.

839,050. Attachment for Acousticons Permitting Use of Ordinary Telephones.—Turner.

An acousticon is a device consisting of a receiver, a microphone movement and a source of current. A deaf

person places the receiver to his ear and the speaker talks into the microphone mouthpiece. This invention consists of a means for connecting the microphone and the telephone receiver so that a deaf person may speak over

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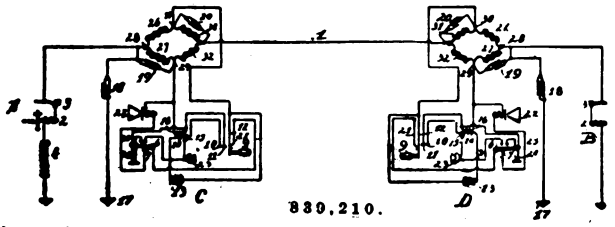
the ordinary telephone, the vibration of the ordinary telephone receiver diaphragm affecting the microphone and reinforcing the sound in the acousticon receiver.

839,210. Composite System of Telephony and Telegraphy.—Rugh.

Many different methods have been devised for preventing interference between telephone and telegraph cir-



839,210.

cuits when superposed on the same line wire. In the present invention the telegraph is led through a Wheatstone bridge sort of an arrangement with the A B bridge arms and rheostat and unknown resistance arms composed of impedance coils. The telegraph circuit is connected to the joining point between the A & B arms of the bridge and the switch junction points of the R & X arm. So then the telegraph current passed through the two multiple series connections and impedance coils. Now, as will be observed, the B and A arms of the Wheatstone bridge are shunted by a condenser and the telephone circuit is connected to the point where the galvanometer of the bridge is usually connected.

From the above it will be understood that while speaking at the telephone, C, the telephone current reaches the line wire without encountering any impedance, and further that the telegraph current passes over the line without there being any loss of current through the telephone equipment, and therefore no inductive disturbance between the telephone and telegraph circuit.

Talks and Queries

EDITOR SOUND WAVES:—Will you kindly answer the following inquiries?

I have several grounded country lines that are perhaps ten or twelve miles long, with 15 or 20 'phones on each line, and equipped with 1,600 ohm bridging bells.

1. They have trouble in ringing central. I have tested all drops and they work fine with a test set, but subscribers cannot ring in at times. I do not know what resistance these drops are wound to. The bells are equipped with 5 bar generator. Central has no trouble in ringing subscribers.

2. Does it require more current to operate a low wound drop than it does a high wound drop?

3. I have other grounded lines that the trouble is in the opposite direction. We can ring the 'phones that are nearest the central office, but are unable to ring 'phones that are near the end of the line.

4. How would 2,500 ohm bells work on the above lines? I argue that it requires less current to ring a 2,500 ohm bell than it does a 1,600 ohm bell. Who is right?

Kindly answer the above, especially No. 4, as it will settle an opinion between some of my working friends.

I wish to say that Sound Waves gives me lots of information and would not be without it.

Your difficulty is one usually experienced when the resistance and windings of the switchboard drops is not properly proportioned to your line, and it is also apparent that some of the telephones which you have may be equipped with unsuitable magneto generators. The fact that you are able to ring the telephones from a test set does not determine any difficulty unless you go clear to the end of the line and ring in from the end of the circuit and observe whether the switchboard drop falls. If it does, there is something radically wrong in the design of the magneto generators. It is possible that the winding on the armature of the generators is of too high a resistance and consequently of too low a current output.

The generator armature of a telephone used for party line service should be filled with wire, but this wire must be of so large a size that the resistance of the armature is very low and at the same time the number of turns of wire on the armature must be sufficient for producing the required voltage. Usually 80 volts is high enough, when produced by a generator equipped with suitable number of magnets and properly constructed armatures and pole pieces. However, assuming that when you go to the end of the line and ring into the switchboard from a test set, and this throws the drop in the switchboard, it may be safely taken for granted that the switchboard drop is about right in resistance. If the switchboard drop should not fall, it will require an examination.

Write the manufacturer of the switchboard and inquire as to the resistance of the drops. They should be wound to approximately 750 ohms, though this will depend somewhat on the length of the line and the number of the telephones connected to it; but, taking a 12 mile line and 20 telephones, a 750 ohm drop, when properly constructed and adjusted, should give you good service. The fact that the central operator is able to ring the subscribers' bells indicates that there is nothing wrong on the line circuit. That is, the bells are probably all of the proper resistance and the line is not crossed in any way.

So, then, as the matter stands, it is either a case of weak generators in your telephone or an unsuitably proportioned winding in the switchboard drop.

It should also be remembered that the switchboard drop, if wound much below 650 ohms, is not at all suitable for a line such as you describe.

Your second question may be answered by stating that when a switchboard drop is wound to a low resistance it will depend altogether on the size of the drop whether it requires more or less current to operate it. The sensitiveness of a drop of any device having electromagnets as a portion of its construction depends not on its resistance, but on the number of turns of wire wound around its magnet core and on the amount of current passed over the wire. Therefore, with the same generator in the telephone, and this generator producing current at, say, 80 volts, then a low wound drop would take more current than the high wound drop would take, but the high wound drop would be the most sensitive one owing to the larger number of turns of wire wound on the magnets of the drop.

Your third question is one which indicates that the generator at the switchboard is not sufficiently powerful for ringing the bells at the far end of the line. You probably have a buzzer connected in series with the generator in the switchboard so as to indicate whether you are ringing out on an open or a grounded line. This buzzer may be made of very low resistance, say 20 ohms, and you undoubtedly will find that you are able to ring the bell located at the farthermost end of the line.

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Your fourth question may be answered by stating that a 2,500 ohm bell will undoubtedly permit you to signal farther than a 1,600 ohm bell, as it requires less current, but a 2,500 bell will not ring nearly so satisfactorily as a 1,600 ohm bell, unless you supply the telephone with a special generator which produces a higher voltage than is ordinarily the case. Remember that the sensitiveness of a ringer depends on the turns of wire on the ringer, and the current flowing through this wire.

We refer you to other articles in this paper which will help you to better understand this question No. 4.

EDITOR SOUND WAVES:—Have you any telephone journal telling the working of the selective ringing service, and if you have not would you let me know where I could find one.

In answer to your inquiry, beg to advise that a series of articles is now running in SOUND WAVES which will thoroughly describe all types of selective ringing party line systems. Mr. Einar Brofos is the author of these articles and you will undoubtedly find them giving you the desired information. If you will advise just what particular party line you desire specific information on we shall be pleased to take up the matter further.

EDITOR SOUND WAVES:—We are having trouble with one of our rural telephone lines, and would be pleased if you could tell us what is the matter. We have two exchanges, about twenty miles apart, and have a line running from one exchange to the other, with about twenty 'phones on the line.

The 'phones on the line will ring each other, and it will ring at one exchange, but will not ring at the other.

It appears to be grounded, but the trouble seems to come and go.

After taking the line out of the cable and bringing it in direct to the drop, and cleaning all the lightning arresters, it did not help the matter.

We changed it over to another drop and it would ring in all right, but the operator could neither talk nor hear.

At times it will talk and ring good both ways, then again it will seem to go to ground and will neither talk or ring satisfactorily.

The line is not noisy like a line is ordinarily when grounded.

If you can tell me through the columns of Sound Waves where I can find the trouble, I will be greatly obliged.

The trouble of which you complain my be due to a combination of causes. You already have stated the probable nature of the trouble, viz.: an intermittent grounding of the line. Another cause for your difficulty appears to be that the switchboard drop at one of the exchanges is not wound to a suitable resistance. It may be that the exchange which does receive signals contains a drop which is of too low resistance, and while the signals are recorded at that exchange, most of the current generated passes through this low resistance drop, and not enough current is left for throwing the drop in the remaining exchange.

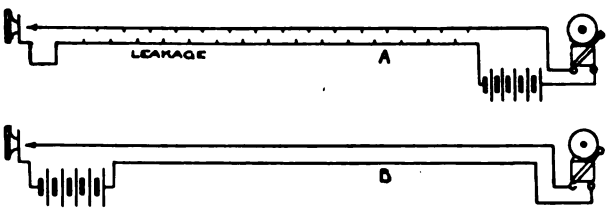
We should suggest that you obtain new switchboard drop coils for both ends of the line; these drops to be wound to a resistance of 750 ohms. And be sure that the line wires are connected to, say, the tip side of the spring jack in both exchanges, and that the sleeve side of the spring jack is the one which connects to earth, provided your rural line is grounded.

Sometimes these intermittent troubles are caused by the line becoming grounded through such causes as receiver binding posts coming in contact with the body of the hook switch, and instances are known where obstinate cases of intermittent grounding of a line were caused by the carbon tops of the dry batteries coming into contact with screws fastening the magnetic generator in place. This, of course, can only take place in telephones where the batteries are mounted immediately below the generator.

EDITOR SOUND WAVES:—I wish to ask for a little information through the columns of Sound Waves.

We have a metallic bell line, about two miles long, inside a mine, on which we have a 12-inch, single stroke bell, and 24 Samson, No. 2 solution batteries, which become exhausted quite often. This, I think, is due to partial short circuits, caused by the moisture on the knobs and props. Would not the Edison primary battery of 300 ampere hours give better service, and last longer? And how many should we use?. How can you tell when the carbons of a Samson battery are worn out, or need refilling?

If you are using 24 Sampson No. 2 solution batteries on the circuit and this circuit remains normally on an open circuit, we do not understand why these cells should give out so quickly unless you have installed the battery close to the bell and have the circuit closer at the far end of the line. Under such conditions of course all leakage between the line wire would tend to exhaust the batteries. The suggestion which may be offered is that you place the batteries close to the push button, or signaling key, then you will not have this loss of current. The diagram gives you an idea of what is meant. Sketch



A shows your plan and sketch B shows a plan which will overcome the constant battery leakage.

It may be possible, however, that you are operating a single stroke bell which is normally on a closed circuit. i. e., the bell operates when you open the circuit. If this is the case, you should immediately abandon the Sampson batteries and install a closed circuit battery similar to the Edison or Gordon types of batteries. If you require 24 Sampson batteries to ring the bell, it would mean about 36 volts, and owing to the Edison or Gordon batteries giving about .8 volts it would obviously require 45 cells of battery in order to give you the 36 volts.

Your question as to how you can tell when the carbon of a Sampson battery is worn out should probably be understood as applying to the granular carbon and manganese in the carbon cup.

The best answer we can give you to this is that when your battery refuses to pick up on being recharged that is the best time to throw the contents of the cup out and replace it with new.

Wisconsin Long Distance Line

H. D. Critchfield, president of the new Milwaukee Independent Telephone Co., Richard Valentine and C. J. Chapin have incorporated the Wisconsin Independent Long Distance Telephone Co. The purpose is to build through toll lines in Wisconsin, radiating from Milwaukee, connecting with the larger Independent properties in the state. The initial capital of the company is $25,000.

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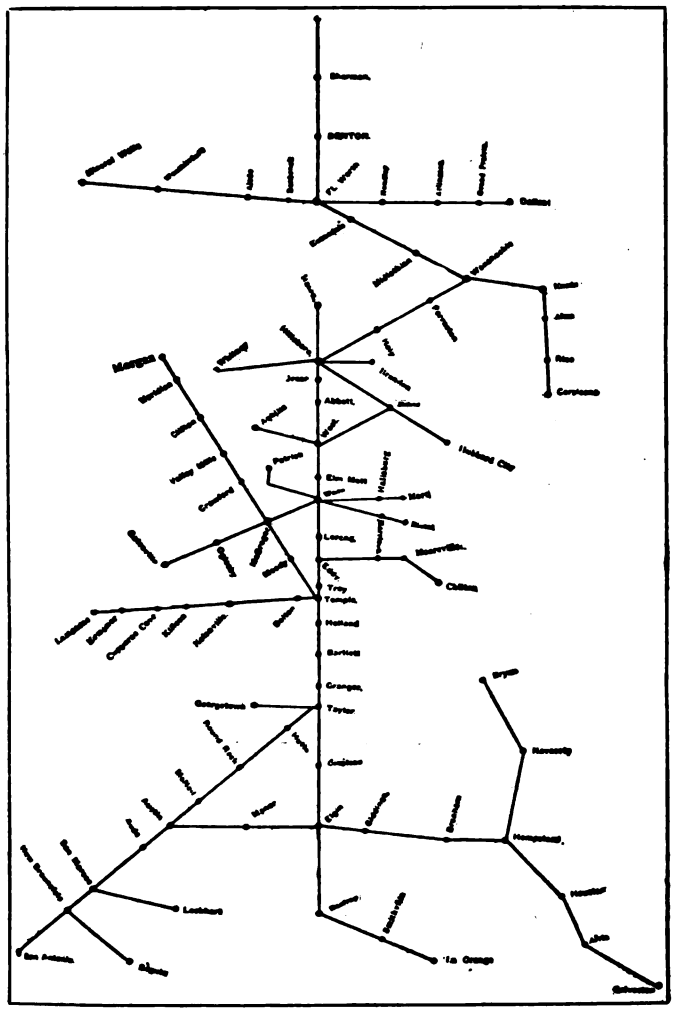
The Proposed Texas Telephone Legislation

By C. K. SWEET

(Reprinted from the Weatherford, Tex., Transmitter)

For thirteen years I was associated with the Southwestern Telegraph & Telephone Co., in its construction and engineering departments, and a few months ago I resigned my position with them to enter into the field of Independent telephone engineering, as the Independent field offers an opportunity for greater development and expansion in line with my chosen profession. The opportunity is present and the need very apparent for developing the Independent telephone business in Texas



Map of Texas Independent Toll Lines

to the end that it will be a real factor in competition, which should be desired by the telephone using public as well as those financially interested in Independent companies. At this time I am not employed by the Southwestern Telegraph & Telephone Co., and my long years of service with that company have not robbed me of my individuality.

I want to see the Independent companies succeed, too, because competition is the life of trade. Strong competition in the telephone business in this state will be good for the public as well as the hard-working, poorly-paid, but deserving, man now in the business, who has no competing bids for his brains and labor.

Strong competition will also tend to eliminate to a certain extent the practice of favoritism prevalent in the large companies, and will give the deserving man and the man of true merit and superior talent and attainments an equal chance with the relatives and personal friends of the officials and heads of departments of the large companies.

The practice of favoritism and the payment of low salaries is not confined to any one company, but as a rule is prevalent in any and all companies having almost or quite a monopoly of its particular line of business. The public does not receive the courteous treatment, and the consideration due it, by all monopolies of the various public service utilities, and it is the duty of the public to see that there is competition in all classes of public service utilities.

Legislation has been thought of as a remedy for controling monopoly, but in almost every case it has not proved to be the remedy. The legislation route is a favorite one, especially so with self-important, small-bore politicians and some outsiders who have axes to grind, or who are not favored with passes on railroads or franks over long distance lines or free exchange service. The coming session of the Texas legislature is expected to pass laws affecting the telephone business of the state, as prescribed by a plank in the democratic platform, which, if enacted into law, will result, in my opinion, in great evil to the public at large and demoralize the telephone business of the entire state.

The plank in the democratic platform referred to is that adopted in the last state convention which declares the purpose of the party to force physical connection of all telephone lines owned and controled by competing companies. It occurs to me that the democratic party has placed itself in a position where it stands out against competition in the telephone business, and is preparing to establish a precedent dangerous to the existing and any further anti-trust legislation, because if this plank of the platform is enacted into law it will undoubtedly neutralize the powers of the existing anti-trust law and make it in-operative, according to my manner of reasoning. The public howls about trust abuses, and to appease them the office-holding politicians pass anti-trust laws; again, the public howls about real or imaginary wrongs, and the office-holding politicians prepare to undo their previous acts by passing a law to neutralize a law.

Should a law be passed compelling all local and long-distance telephone companies to give each other physical connection, and be placed under the supervision of the state railroad commission (although the party plank does not stipulate such) the commission would, no doubt, regulate the rates charged for telephone service, what would, in that event, become of the competing exchange? One exchange must surely absorb the other, for, if the patrons of one exchange can get connection with all of the patrons of other exchanges, the rates charged being the same, why have two companies?

It is true that one exchange might cover a small territory that the other exchange did not cover, but the company having the largest subscription list and the most long-distance connections would dominate and the other company would be relegated to small patches of territory here and there, and to the out-skirts of the city,

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where the dominating company did not care to build, due to the enormous expense per line for construction and the greater cost of maintenance. Competition in this case would be killed and the public would be left to the tender mercies of the trust, which it sought to control, but instead made it stronger and greater by the enactment of a law.

Under the rulings of the commission, or rather under the state laws, a railroad must be kept in a certain specified state of repairs, and if this is not done when examination is made and if the company is not able to bring its tracks and rolling stock up to requirements the road is placed in the hands of a receiver and, later, sold, possibly.

Would not the commission require toll lines and exchange lines and equipment also to come up to a certain standard of excellence? If they did not come up to these requirements a receiver would, in all probability, be appointed and if the property was sold who would be the purchaser?

Again, would the commission rule the same in the matter of competing (?) telephone lines as it does with the railroads? If it did, competing companies would not be allowed to give each other connection; only those lines which had no competition would be allowed to give each other connection; only those lines which had no competition would be allowed to connect with both companies. As an illustration, suppose, as is the case, that the Southwestern Telegraph & Telephone Co. had a line connecting Dallas and Mineral Wells and all intermediate points, and the Independent company had a line connecting Dallas and Weatherford. Now any business originating at points between Mineral Wells and Weatherford for points east as far as Dallas would be handled by the Southwestern Company, and all business originating at points between Weatherford and Dallas for Mineral Wells or points between Weatherford and Mineral Wells would be handled, likewise, by the same company because the Southwestern Telegraph & Telephone Co. could explain to the commission that its lines reached all of these points, and its facilities were ample for handling the business. On the other hand, suppose a third company owned the line from Weatherford to Mineral Wells; in this case either company securing business for points between Weatherford and Mineral Wells would connect with that company. Now suppose the company owning the line between Weatherford and Mineral Wells did not supply enough facilities for handling the business, or that the facilities were not ample and the line was poorly maintained, which would cause an investigation by the commission, and later advertised and sold to the Southwestern Telegraph & Telephone Co., the Independent company would have no further chance for connection, and vice versa, unless a competing line was built.

It is the opinion of some of the best lawyers in the state that the telephone lines and exchanges would not be placed under supervision of the railroad commission.

I cannot conceive how such a law could be enforced or how the companies could be regulated unless they were placed under the supervision of one of the heads of the departments of the state government, unless a telephone commission was appointed or a special commission was created to control or regulate them. This, however, is for the legislature to decide and really has no place in this article.

If all competing lines are forced to connect with each other, why should there be competition? This bears out the idea of the Bell companies that the telephone business is a natural monopoly, and the democratic party, by its action, seems to share in the same belief, unless it is that the leaders of the party have not yet investigated close enough to discover the iniquity of such an act.

Why should any company, with good lines, be forced to give connection to a lot of barbed wire fence lines, and any other lines of poor construction and equipment, and poorly maintained? Would it be justice to the company with good circuits to have its lines tied up by poor lines when the good line could be earning something every minute of the day? All operating companies know full well the difficulties of giving good telephone service long distances when the circuit in use contains a section of grounded line that is poorly maintained. Grounded lines, as rule, are unfit for long distance service, due to disturbances caused by earth currents, and inductive influences, and the majority of the lines following the country roads in Texas are of this class.

What is needed in Texas more than legislation affecting the telephone industry is more strong competing long distance telephone lines, paralleling those of the Southwestern Company, and connecting all of the Independent exchanges in the state. Competent telephone engineers should be employed to supervise the construction of the lines to operate them after completion. The telephone business, when handled by a well trained and experienced telephone man, is a good paying investment, and the stock of a company so handled, in my judgment, is as good and safe as that of any other concern, even bank stock.

Returning to the subject of the proposed legislation, I believe it should be the duty of every voter to raise his voice in protest against the enactment of such a law, as its tendency is undoubtedly toward the destruction of competition.

There are several lines proposed in this state to compete with the present company, but the projects are being held up awaiting the action of the legislature because those financially interested do not care to invest their money in telephone lines if this plank of the platform is enacted into law.

Peculiar Claim for Damages

In a suit for $25,000 damages, filed by Miss Julia Westwood against the Chicago Tele. Co., the plaintiff claims that the defendant company permitted her to use apparatus, as a telephone operator, which may result in her becoming mentally unbalanced. It is said that Miss Westwood upon being employed was given a defective receiver. The current of electricity being heavy, it is claimed she was given a shock which rendered her unconscious. It is said also that she has been ill since. The accident is said to have occurred in January, 1905.

New Building for Des Moines

The Mutual Telephone Co., Des Moines, Iowa, in December of last year, bought a lot, 50 x 150 feet, on the street one block north of the Capitol building, whereon it is erecting a two-story, fire-proof, entirely modern branch office for the east side business. A central energy multiple switchboard, with 3,000 lines capacity, will be installed in the near future. The company has been rebuilding East Des Moines all through the fall and winter and hopes to have everything in readiness to make the cut-over by the time the new building is completed.

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The Law and the Telephone

By GEORGE H. MURDOCK, JR.

LIGHTNING—NEGLIGENT PLACING OF GUY WIRES

Edith E. Wells recovered a verdict of $804.00 for the destruction of her barn and its contents by fire alleged to have been caused by the negligence of the Northeastern Telephone Co. in the construction and maintenance of its telephone line past her premises on the west side of the highway in the town of Avon, in the state of Maine. One of the defendant's poles, upon which its line wires were suspended, was erected within five feet of the northeast corner of the plaintiff's barn, and a guy wire consisting of a piece of ordinary telephone wire was stretched from the pole to the corner of the barn. There was no lightning arrester, or other appliance, connected with this guy wire or with the telephone wires in that vicinity to divert powerful currents to the earth at the time of thunderstorms. Immediately before the fire a thundershower came up in the vicinity of the plaintiff's buildings, and there was a discharge of lightning of extraordinary violence. A board on the corner post of the northeast corner of the barn was newly split from a point a little above where the guy wire was attached downward nearly to the sill. When first seen the fire was in this corner of the barn directly beneath the point where the guy wire was connected with it, and there was no indication that the barn was struck by lightning at any other point. The plaintiff's theory in substance was that a fragment of the lightning struck the telephone wires near by and that an electric current was eventually conducted by means of the guy wire to the corner of the barn which was thus ignited. The defendant's theory was that the barn was destroyed by lightning which descended directly from the clouds and communicated the fire without the intervention of any of its telephone wires. Expert evidence in support of both theories was offered and admitted.

On appeal from this verdict, the supreme judicial court of Maine, overruling the defendant's exceptions, said in substance:

"In view of the admitted limitations of human knowledge respecting the laws of electricity and the immeasurable potential of a lightning discharge, the opinions of electricians in regard to its possibilities in a given case can not be adopted with the same confidence as expert opinions based upon the knowledge of the more exact sciences; and in view of the manifest effects of the lightning upon the telephone poles and the corner board of the barn in the case at bar, held, that the evidence warranted the jury in following the conclusion of those experts who believed that the destructive spark was conveyed to the corner of the barn by the telephone wires, in preferenc to those who testify that the barn was struck by a branch of a lightning bolt discharge directly from the clouds.

"If the plaintiff's theory is correct that it was not safe or suitable construction to connect the guy wire with the barn without a lightning arrester or circuit breaker, then the evidence warranted a finding by the jury that the defendant company did not exercise reasonable and ordinary care in establishing its line at the point in question.

"If the defendant's theory is correct that it is utterly impracticable to divert lightning currents from such a wire to the earth by means of any insulators or circuit breakers hitherto devised, it cannot be said to be manifest error on the part of the jury to find that such wire should not nave been attached to the barn at all, and that in making such a connection, the defendant, if possessed of scientific knowledge to sustain its theory, did not act with proper regard for the rights of the plaintiff and the safety of her property.

"The defendant was not obliged by law to guarantee the safety of its system under all possible conditions and circumstances, but it was required to exercise that due and ordinary care which the present state of scientific knowledge, as well as common observation of the nature of electricity, and the enormous power of lightning would suggest as reasonably necessary for the protection of life and property along its line." 64. A. 648.

USE OF HIGHWAYS

A telephone line along the margin of a highway is not an additional burden, entitling the abutting owner to compensation.—Hobbs v. Long Distance Telephone & Telegraph Co., 41 So. (Ala.) 1003.

TELEPHONE FRANCHISE

Where a city ordinance granted a franchise to maintain a telephone system "within the present and future corporate limits of the city" on condition that two per cent. of the gross receipts collected from the use of the system be paid to the city, while the city is not entitled to collect the percentage of the receipts from the operation of long distance lines, it may collect the percentage of the receipts from the use of the system within the city in connection with the long-distance line.—City of Lancaster v. Briggs, 96 S. W. (Mo.) 314.

MUNICIPAL TAXATION

An ordinance granting a franchise to a telephone company to construct and operate its plant and the right to maintain its poles and wires in the streets contained a provision that the company should pay to the city annually a stated sum for each box in use by it, "in lieu of all other taxes except water tax." Under the constitution and statutes of the state, the city had no power to exempt property from ad valorem taxation, but was expressly prohibited from doing so. *Held* that, in view of sucn limitation and of the rule that, where a statute or an ordinance is capable of two constructions, one of which would make it valid and the other void, the former is to be adopted, such provision must be constructed as providing the box tax as the measure of the municipal taxes or charges which might be imposed by the city on account of the use and occupation of its streets and public places; tnat, as so construed, it was valid, and the payment of the tax therein provided for did not affect the right and duty of the city to tax the property of the company as assessed by the state for general purposes. —Mayor, etc., of City of Nashville, Tenn., v. Cumberland Telephone & Telegraph Co., 145 F. (U. S.) 607.

PERSONAL INJURIES—CONTRIBUTORY NEGLIGENCE

A traveler driving along a highway is not required to look up to see if a telephone wire is in reach of the top

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of his vehicle in order to be free from contributory negligence precluding a recovery for injuries received in consequence of the vehicle coming in contact with a wire dragging over the highway in consequence of a broken pole.—Jacks v. Reeves, 95 S. W. (Ark.) 781.

HIGH TENSION WIRES—CARE REQUIRED

Where defendant electric light and power company maintained certain high-tension wires near the distributing pole of a telephone company which the latter's employes were required to climb, defendant owed such employes a legal duty to have its wires so placed and insulated as to permit them to perform their work in safety.—Zeihn v. United Electric Light & Power Co. of Baltimore, 64 A. (Md.) 61.

ERECTION OF TELEPHONE POLES IN STREETS

Transportation Corporations Law, Laws, 1890, p. 1152, c. 566, art. 8, § 102, declares that telegraph and telephone corporations may erect, construct and maintain the necessary fixtures for their lines "upon, over or under" any of the public roads, streets and highways, etc.; and Village Law, Laws 1897, p. 394, C. 414, § 89, subd. 9, confers on villages power to regulate the erection of telegraph, telephone or electric light poles or the stringing of wires in, over or upon the streets or public grounds, or upon, over, or in front of any building or buildings. *Held*, that such power to regulate was intended to authorize villages to determine the location of the poles and the streets to be occupied and did not authorize villages to pass resolutions requiring the elimination of open-air construction and the placing of the wires in conduits.—Village of Carthage v. Central New York Telephone and Telegraph Co., 78 N. E. (N. Y.) 165.

SERVING SUPBOENA BY TELEPHONE

Burt Terrell was fined by Judge Sam. R. Scott, of the Fifty-fourth judicial district, and imprisoned in the county jail in a certain contempt proceeding. On an application for a writ of habeas corpus the Texas court of criminal appeals said:

"It appears there was pending before said judge a certain criminal case, styled 'State of Texas v. Ernest Ferguson,' in which Ferguson was charged with arson. On said date Ferguson caused a subpoena to be issued to McLennon county for the applicant, Burt Terrell, and placed the same in the hands of the sheriff. Witness lived at the town of Crawford, some twenty-five miles from Waco, the county seat, and the subpoena was served by the sheriff reading the subpoena to witness Terrell over the telephone (there being 'phone connection between Waco and Crawford), which subpoena required him to be in attendance on said district court where said case was pending by nine o'clock on the 26th day of October. The sheriff stated that he knew Terrell, called him to the 'phone, and recognized his voice; that Terrell claimed he was sick and could not come, and the sheriff informed him that he had better get a certificate from a doctor and send it to the judge of the court if he was really sick. It is also shown in this connection that there is railroad connection between said points, and it was practicable for Terrell to have obeyed the subpoena. However, he did not obey the subpoena, and did not send any certificate of a physician that he was sick. When the case of Ferguson was reached the state announced ready for trial, and defendant made a motion for continuance on account of the absence of the witness Burt Terrell and two others. The court overruled said application, and ordered an attachment issued for Burt Terrell. This was executed by A. L. Blanton, deputy sheriff, in this wise: Blanton lived at McGregor, and the sheriff 'phoned him to go to Crawford and attach Terrell. The deputy sheriff went to Crawford, though he did not have the writ of attachment in his possession, and brought Terrell to court at Waco. When Terrell presented himself in court, the judge inquired of him why he had failed to obey the subpoena that had been issued for him, and applicant claimed the sheriff had called him up over the 'phone and told him something—that he could not understand him well. The court thereupon called the sheriff into court, and in the presence of Terrell asked him if he in person summoned witness Terrell in the pending case, and he replied that he did. He stated: That defendant Ferguson placed in his hands a subpoena for Burt Terrell. That he called Burt Terrell over the 'phone and Terrell answered, and he told Terrell that the Ferguson case was set for trial in the Fifty-fourth district court and that he (Terrell) must appear at said time as a witness in said case. That Terrell then stated that he had never been summoned in said case; and the sheriff then told him 'That is what I am doing now. A subpoena for you has been issued, and I am reading from that now.' That Terrell then said he could not come; that he was sick. The sheriff told him he had better be on hand or have a doctor's certificate. The court then asked Terrell what he had to say, and he stated, 'I have nothing more to say.' The court then proceeded to render against applicant the judgment complained of, and proceeded to execute the same by placing applicant in jail. Applicant then sued out before the court the writ of habeas corpus. .

"Applicant insists that the action of the court is without authority of law, in that under the facts stated the court had no power to render the judgment nisi, adjudging him guilty of contempt of court, much less make said judgment final. This involves the question: First, whether the service of a subpoena could be made over the telephone; and, second, concede that such service is authorized by our statute, judgment against applicant could not be made final in the first instance. When our statutes were passed on the subject of subpoenas and their service it was before the invention of telephones—at least before their use in this state. Of course, the law originally contemplated personal service. The statute, in article 513, Code Cr. Proc. 1895, says: 'A subpoena is served by reading the same in the hearing of the witness, and the officer having the subpoena shall make due return thereof,' etc. There are other statutes in connection with this showing that the officer is entitled to fees for service, and certain fees for mileage traveled in making the service. Indeed, all of our statutes on this subject appear to contemplate a personal service, not only by reading the process in the hearing but in the presence of the witness. However, it is urged that service by 'phone is within the letter and spirit of our statutes on the subject of serving process. If this were clearly true, then the law might be applied to the new invention, or the new invention applied to the law. But we do not think so. In such case service by 'phone, the party served being without the view, could only be identified by the voice of the party on whom the service should be made, and this could only apply to but few cases, only to such as the officer making the service could know and recognize the voice, and this would be a rather unsatisfactory

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method of identification at best. The best means of identification would be recognition of the person on whom the service was made; such recognition based on personal view of the witness by the officer. Accordingly we hold that service by 'phone is not contemplated or embraced by an officer on a witness." 95 S. W. 536.

Independent Enterprise in the South

One of the first towns in the south which resolved to throw off the yoke of the Bell company was Bristol, located on the state line between Tennessee and Virginia. There are two municipalities, one in each state, and the combined population of the two towns is over 18,000. There are two telephone exchanges, the East Tennessee (Bell) Co. and the Bristol Telephone (Independent) Co.

ALBERT PARLETT,
President Virginia State Independent Telephone Association.

There are in service more than 1,250 telephones, more than 80 per cent. of which are connected with the Independent company.

The telephone history of Bristol is the telephone history of many other towns of its size. The East Tennessee Telephone Co., in 1894, had a small number of subscribers at exorbitant rates, with poor service and indifferent attention. There were less than 100 subscribers, at rates of $4 and $3 for business and residence telephones, respectively. After a meeting of the citizens of the town, at the hands of the Bell Company, an Independent exchange was constructed by the Bristol Telephone Co., whose charter bears date of April 20, 1894. Starting with 100 telephones, this company now has more than 1,000 telephones in its Bristol exchange, while the Bell Company has less than 200.

After the Bristol Telephone Co. commenced operation the Bell people commenced giving free service, which was promised for an indefinite time and until further notice. This free service was actually given for a number of years and still exists to a greater or less extent in the shape of sixty and ninety days' free trial service, at the expiration of which time an effort (usually unsuccessful) is made to retain the subscriber on a rental paying basis.

Throughout the period of unfair competition which has been waged, and which is still being waged against it, the Independent company has continued to charge and collect its regular rates for rental service and tolls, relying upon its superior service and courteous treatment of the public as a means of holding its business, and relying also upon the truth of the assertion that "the public as a rule does not want something for nothing, but is willing to pay a fair and equitable price for what it gets." This policy has proved a winner, as shown by the growth of the Bristol exchange in the face of the unfair methods pursued by the Bell management.

Since its organization the Bristol Telephone Co. has developed the territory commercially tributary to Bristol, with the result that it is operating exchanges at Johnson City and Jonesboro, Tenn., and at Abingdon, Glade Spring and Chilhowie, Va., the largest of which is at Johnson City and numbers 350 subscribers. The company has toll lines and farmers' lines extending throughout East Tennessee and Southwest Virginia, giving connection with more than 5,000 telephones. The policy of the company toward the farmers has resulted in the entire section being threaded with farmers' lines.

The president of the Bristol Telephone Co. and one of the leading spirits in the Independent movement in this immediate section is Albert Parlett, a native of Baltimore, Md., who moved to Bristol with his family a number of years ago. He has long been connected with public service corporations, and constructed the electric lighting plant which years ago gave Bristol its first incandescent lights. In his management of the Bristol Telephone Co. he is ably assisted by Wm. G. Griffin, manager of the Bristol exchange and the practical man of the company from an electrical point of view.

Mr. Parlett was one of the organizers of the Virginia State Independent Telephone Association, and at its first meeting was elected its president.

Dual Telephone Service Endorsed

Secretary Walcott of the Boston Merchants' Association recently addressed a number of commercial bodies in regard to the value and disadvantages of the dual telephone system in their cities. Among the answers received were the following:

S. E. Hutton, secretary Chamber of Commerce, Troy, N. Y.—We do approve of dual telephone service; competition improves.

Wholesalers' Board of Trade, Los Angeles, Cal.—Dual telephone produced greatly improved service; worth the extra expense.

E. D. Bigelow, secretary Board of Trade, Kansas City, Mo.—Personally would say, expense increased, as business houses compelled to subscribe to both. Competition has improved service.

Board of Trade, Dayton, O.—Better service, but business concerns must have both.

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Legislation Needed in Iowa

By DR. J. S. CASTER

(Former President League of Iowa Municipalities, Burlington)

Something is necessary for the protection of the Independent telephone companies in Iowa from the great advantage the Bell system has over them. Competition is the life of trade, when the competing is done fairly and upon a just basis. But when you give one the advantage by turning him free and tying up the other there is no competition—it is a sadly one-sided case.

The telephone situation in Iowa can well be compared to two men entering for a foot race, one with his feet shackled and the other free to run unshackled.

Nearly every Independent telephone line in our municipalities is tied down with a franchise and restricted to a mere existence. Rates are lower with a fixed limit. Why is this? Every one who knows anything about the telephone business knows that the patents on the telephone were held and controlled by the Bell Telephone Co., and they had the sole monopoly of the business until the patents expired. This is fair, and we cannot blame its managers for holding to the rights the patents afforded them. The oversight is in the legislation which, no doubt, occurred at the time this franchise law was enacted.

There was no law prior to 1897 requiring telephone companies to secure a franchise from municipalities in which they wished to do business, although many were working under franchises at the time the code was revised. In the new code telephone companies were included with many other public utilities, and all companies starting since that date have had to secure a franchise. This is all right, and as it should be, but our lawmakers did not see the shrewd cloak that protected the Bell Telephone Co. from this new act and the great advantage it secured thereby over all new companies. Naturally, the Bell Telephone Co. was anxious to see this new law go into effect, as it restricted other companies, without affecting them.

In brief the situation is this: The code of 1873 contained a section giving the telegraph company the right of way over all public roads, lands and highways. On March 16, 1882, the telephone company secured an amendment to this section (Section 1324, Code of 1873) by adding after the word "telegraph" the words "or telephone." Consequently the Bell Telephone Co. was working under the act at the time of the revision of the code of 1897 and therefore was not affected by it, as section 1324 of the code of 1873 was not changed. Companies formed since 1897, and all companies holding franchises at that date, must comply with the meaning of the Code of 1897 and must secure or renew the franchise they held, which is unjust to both the new companies that come under this restriction and the people who are compelled to have a telephone service.

The effect of this great advantage can be illustrated in no better way than by taking the situation in Burlington, Iowa, my home city. When the Independent telephone company was established here the Iowa Telephone Co. (better known as the Bell) cut rates down to from $48 to $12 per year until it got the service of the new company so crippled that it had a hard struggle for existence. Then it advanced its rates from $12 per year to $48 per year.

This caused me to make an investigation as to where it had so great an advantage over the new company, and also prompted me to appear before the last legislature in support of the following bill which passed the senate with only one dissenting vote and which, I hope, both sides will pass this winter:

Be it Enacted by the General Assembly of the State of Iowa:

Section 1. That section twenty-one hundred and fifty-eight (2158) of the Code be and the same is hereby amended by striking out the "period" (.) after the word "therefore" in the fifth line and inserting a "comma" (,) in lieu thereof and adding the following, "but no person, firm or corporation owning or operating a telephone system within the limit of any incorporated city or town within the state, not having a franchise legally granted by such city or town in which it is transacting business, shall be permitted to extend its lines, poles, wires, conduit or place any additional telephones until such person, firm or corporation shall have been legally granted a franchise authorizing and permitting it to make extension."

In this effort to secure just legislation I solicit the support of every citizen in Iowa not interested in the Bell Telephone Co. See the senators and representatives from your own county, let them have your views, although they may differ from mine. They should know what the people want. If you are willing to handle and secure signers to a petition in your locality to the next legislature in support of this bill drop me a line and I will furnish you with blanks. My interest is a public interest, as I have not now, nor ever have had, one dollar invested in any telephone line or company. I simply wish to secure for the municipalities the same rights and privileges over all telephone companies in the state of Iowa that they now have over only part of them.

A Good Chance for Capitalists

With 500,000 Independent telephone users in Ohio, Indiana, Kentucky and West Virginia who cannot communicate with Cincinnati, the merchants of that city realize that they are losing hundreds of thousands of dollars of business every year which is diverted to adjoining trade centers that enjoy local and long distance Independent service. With Chicago and Milwaukee added to the Independent column, Cincinnati is the only large city in the central west which remins uncaptured. Phillip Fitzsimmons, of Cincinnati, has a franchise running to 1921, and is desirous of interesting persons and capital in the organization of an Independent company and to make connection with the long distance service. His franchise is probate court decree 5840, and he now operates 3,000 telephones under city ordinance 732 and a resolution of the board of administration.

Liability of Stockholders

The supreme court of Ohio has recently rendered a decision which cannot fail to be of universal interest to the buyers of promotion stock. The court held that stockholders of the Columbia Telephone Manufacturing Co., a West Virginia corporation, who by the terms of its charter were given "fully paid-up and non-assessable certificates" upon payment of only 50 per cent of the par value are liable for the debts of the concern up to the limit of the par value of their holdings.

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Personal and Field Notes

DOMINION OF CANADA.

A HANDSOME EXCHANGE building will be erected at Brantford, Ont., by the Canadian Machine Telephone Co.

A RURAL TELEPHONE LINE has been completed from Russelldale to Mitchell, Ont., and another line is under construction from Mitchell to Kinkora.

EXTENSIVE IMPROVEMENTS have recently been made by the Harrietsville Telephone Association, Harrietsville, Ont. A new directory has also been issued by the company.

THE BUSINESS Men of Dunnville, Ont., are taking active steps for a local Independent telephone company, and a considerable amount of stock has been subscribed already.

THE PEOPLE OF ASHCROFT, B. C., and in the Cariboo region are circulating a petition asking the government to establish a telephone service between Ashcroft and Barkerville.

THE CALGARY-BANFF telephone line, which is being constructed by the Alberta government, under the direction of Superintendent J. H. Grierson, will be completed about February 15.

PRESIDENT WILLIAM COWAN announces that the Revelstoke, Trout Lake and Big Bend Telephone Co. has made connections with Arrowhead, B. C., and that a number of other extensions are planned.

THE CITY COUNCIL of Strathcona, Alta., has granted a franchise to the Edmonton municipal telephone line. The two cities will be connected at once, the residents of both to enjoy the same rates and free exchange.

AFTER A LONG CONTROVERSY the town council of Port Hope, Ont., has granted a telephone franchise to G. W. Jones and W. H. Burley, of Newtonville, representing the Rural Farmers' Telephone Association which has lines throughout Clarke and Hope townships.

THE CITY CLERK OF MONCTON, N. B., has been instructed by the council to give the necessary notice of application to the provincial legislature at the approaching session for a bill to empower the city of Moncton to install a municipal telephone system. The city municipality of St. John will probably issue a similar order.

THE MANAGEMENT of the Canadian Pacific railway has decided to establish a telephone circuit in connection with its telegraph and railway service. For the present this system is worked only between Montreal and North Bay, but it is intended to install it between Fort William and North Bay and, ultimately, between Fort William and Winnipeg.

ALTHOUGH THE CITIZENS of Fort William, Ont., pay only $2 per month for business telephones and $12 per year for residence telephones the city, during the year 1906, realized a profit of $3,300 on its municipal telephone plant, after providing for a sinking fund and interest and laying aside ten per cent. of gross receipts for depreciation in the value of the plant.

THE LEGISLATORS OF CANADA are beginning to be deeply interested in the telephone situation. Col. Ward (Durham) in a speech in the house strongly supported a clause requiring unrestricted exchange of messages. Mr. Lancaster expressed the opinion that the small telephone concern, no matter how small, should be the first to be protected and not the large one.

THE STOCKHOLDERS of the Valley Telephone Co., Ltd., Middleton, N. S., have voted for amalgamation with the Nova Scotia Telephone Co. The Valley company controls 700 'phones and its plant extends from Hartsport to Digby, with a branch to Canning. As the Nova Scotia company has a controlling interest in the Yarmouth Amalgamated the purchase of the Valley line gives it a through service from the extreme east to the extreme west of the province.

THE EASTERN STATES.

AT GREENWOOD, N. Y., the Greenwood Telephone and Telegraph Co. has been organized, with a capital of $2,500.

THE MOONLIGHT TELEPHONE CO., has been incorporated by Lewis E. Gates and Frank S. Child at Shrewsbury, Mass.

THE CITIZENS' TELEPHONE CO., Erma, N. J., has filed a certificate of increase of capital stock from $10,000 to $125,000

AT RICHMONDVILLE, N. Y., the Richmondville, Seward and Sharon Telephone Co., has been incorporated, with a capital of $3,000.

THE TOWN COUNCIL of Greenwich, R. I., has rejected the application of the Rhode Island Home Telephone Co. for a local franchise.

A NEW LONG DISTANCE LINE has been organized in Utica, N. Y., under the name of Delaware & Otsego Independent Toll Line Co. The charter capital is $15,000.

THE COUNCIL OF MONTROSE, Pa., has granted a franchise to the Northwestern Pennsylvania Telephone Co. to enter the borough limits and establish a local exchange.

A NEW COMPANY, to be known as the Farmers' Mutual Telephone Co., is to be reorganized at Washington, Pa., for the purpose of building farmer lines in the western part of Washington county.

APPLICATION FOR A CHARTER has been made for the Harrisville Telephone Co., Harrisville, Butler county, Pa. The promoters expect to consruct lines in Butler, Venango and Mercer counties.

THE STATE GRANGE of Connecticut has voted to work for the immediate repeal of the law which gives a single telephone company the exclusive right to transact the telephone business throughout the state.

MANY NEW TOLL LINES have been built recently by the Bedford County Telephone Co., Bedford, Pa. At the Fishertown exchange a new switchboard has been installed. Further extensions will be made in the spring.

THE HOME AUTOMATIC CO., Brockton, Mass., will establish an exchange there in the near future and has made application for a franchise at Middleboro. H. E. McDonnell, Brockton, Mass., is in charge of the company's affairs.

RESIDENTS OF MACHIAS, N. Y., have organized the Machias Telephone & Electric Co. Branch exchanges will be built at once at Delevan, Primrose and Sandusky, N. Y. Clarence King is president and manager and D. H. Evans secretary.

ALL THE PROPERTY of the Colonial Telephone Co., Newburgh, N. Y., has been acquired by Howard Hendrickson, of Albany, N. Y., and the system will hereafter be known as the Newburgh Home Telephone Co. The capitalization of the new company is $150,000.

APPLICATION HAS BEEN MADE to the Connecticut legislature by the Farmington Valley Telephone Co., New Britin, Conn., for the right to extend its lines to any town in the state. That right is now enjoyed by the Southern New England (Bell) Co., but not by any Independent corporation.

EX-CONGRESSMAN LEWIS SPERRY, of Hartford, has prepared a petition to the Connecticut legislature asking that the Connecticut Telephone Corporation, a new Independent organization, be granted the right of constructing and operating telephone exchanges anywhere within the limits of the state.

THE PLAIN GROVE TELEPHONE CO., which operates in northwestern Lawrence county, Pa., and the southern part of Mercer county, has recently completed a line from its exchange at Volant, Pa., to Indian Run. Several other extensions are contemplated. M. D. Maxwell is president and manager of the system.

CENTRAL STATES.

THE TELEPHONE EXCHANGE at Addison, Mich. has been sold by F. A. Saunders to William Greenleaf.

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THE COMMON COUNCIL of Memphis, Mich., has granted a telephone franchise to F. S. Church.

THE HOME TELEPHONE CO., Richmond, Ind., has increased its capital stock from $150,000 to $400,000.

THE KENTON TELEPHONE CO., Kenton, Ohio, expects to spend $20,000 in new apparatus and cables during the spring.

AT WILLIAMSFIELD, O., C. W. Tourgee and others have organized the Williamsfield Telephone Co. Capital stock, $3,000.

THE HAVANA TELEPHONE CO., with a capital of $5,000, has been organized at Havana, O., by G. G. Van Horn and others.

THE CAPITAL STOCK of Farmers' Exchange Telephone Co., Vickeryville, Mich., has been increased from $2,000 to $12,000.

THE FARMERS OF OHIO and Switzerland counties, Ind., have united their lines and will run a trunk line to Rising Sun, Ind.

THE CAPITAL STOCK of the Hannibal and Round Bottom Telephone Co., Hannibal, Ohio, has been increased from $2,500 to $5,000.

THE MINERVA TELEPHONE CO., Minerva, O., has started the new year with a new organization, a new switchboard and 114 new 'phones.

MANY IMPROVEMENTS are planned by the New Castle Telephone Co., New Castle, O., whose capital has just been increased from $5,000 to $10,000.

WILLIAM H. G. BUTLER, manager of the Columbus (Ind.) exchange of the New Long Distance Co., has been succeeded by J. W. King, of Indianapolis.

THE NEW HOME TELEPHONE CO., has been incorporated at Leo, Ind., with a capital of $10,000. Alvin Klopfenstein is secretary and general manager.

A RURAL SYSTEM of considerable magnitude is planned by the Farmers' Metropolitan Telephone Co., a new corporation, with headquarters at Palmyra, Ind. James Rector is secretary of the company.

TO TAKE PROPER CARE of its rapidly increasing business, the Independent Telephone Co., Newark, O., has instructed Manager C. E. Hollander to buy a new section for the company's switchboard.

THE VANDALIA RAILROAD has installed a private telephone exchange at Terre Haute, Ind., connecting the general offices of the company, the depots, yards and all crossing signal stations in the city.

W. HOWARD MOORE, formerly manager of the Knox County Home Telephone Co., Vincennes, Ind., has succeeded F. B. Chester as manager of the Wood County Telephone Co., Bowling Green, Ohio.

ARTICLES OF INCORPORATION have been filed with the county recorder at Goshen, Ind., by the Dunlaps Mutual Telephone Union, which is a combination of a number of rural lines. Capital, $10,500.

EXPENSIVE IMPROVEMENTS have been made recently by the Eaton County Telephone Co., at Charlotte, Mich. New cables have been strung and the exchange equipment has been overhauled thoroughly.

THE WILMOT TELEPHONE CO., Leesburg, Ind., has sold its exchanges at Wilmot, Cromwell and North Webster to J. E. Armstrong, who expects to develop the property physically and financially as rapidly as possible.

THE LAKE SHORE TELEPHONE Co., back of which is the Stromberg-Carlson Telephone Manufacturing Co., was granted a 30-year franchise by the city council of Benton Harbor, Mich., but the measure was later vetoed by the mayor.

THE RECENTLY INCORPORATED Harrison County Farmers' Telephone Co., Crandall, Ind., has completed its organization by electing the following officers: President, T. J. Stevens, Crandall; secretary, Ben Williams; manager, C. B. Anderson, Corydon.

THE PHOENIX TELEPHONE CO., Steubenville, O., one of the subsidiary companies of the National Telephone Co., of West Virginia, is at present placing conduits under the city streets. The company's new exchange, when completed, will have a capacity of 3,000 telephones.

THE FLORA TELEPHONE CO., Flora, Ind., has purchased the old Flora Telephone Co., the Bringhurst and Flora Co-operative Telephone Co., and the Home Telephone Co. (a Bell concern), all of Carroll county, Ind. Frank P. Lyons is president of the new company and W. E. Callane secretary.

BESSIE LANE, AGED 20, trouble operator at the Bell exchange, Columbus, O., is ill from nervous prostration, brought on, according to the Cleveland Press, by receiving 60,000 "waits" during the year. "The continual strain," said the girl, "brought on a collapse. When I woke up I thought a horse had kicked me in the head."

THE CAIRO TELEPHONE CO., Cairo, Ill., and the Central Home Telephone Co., a local and long distance company, with headquarters at Louisville, Ky., have been consolidated. with H. R. Aisthorpe as president. The name of the new company is Home Telephone Co. of Cairo. A new exchange building will be erected in the near future.

J. F. ROOP, formerly general manager of the Northern Indiana and Southern Michigan Telephone Co., La Grange, Ind., now is general superintendent of the Southern Michigan Telephone Co., of St. Joseph county, with headquarters at Burr Oak, Mich. R. C. Cutting, former trouble man under Manager Roop, has been elected general manager of the La Grange company's system.

SPECIFIC TELEPHONE TAXES may be abolished in Michigan by an amendment to the state tax laws by the present legislature. At present the companies are supposed to pay a tax of three per cent. on their gross earnings, concerning which they are not required to make a sworn statement. It is proposed hereafter to levy a tax on the property holdings of the various telephone and telegraph companies.

WEST AND NORTHWEST.

A NUMBER OF EXTENSIONS will be constructed by the Elk Mound Telephone Co., Elk Mound, Wis., in the spring.

THE TELEPHONE EXCHANGE at Spooner, Wis., has been sold by H. J. Whistler to G. H. Ross, of Chetek, Wis.

GREAT PROGRESS and many improvements have been made during the past three months by the Home Telephone Co., Maquoketa, Iowa.

AT BIG TIMBER, MONT., the Home Telephone Co. has been organized, with a capital of $10,000. Among the incorporators are J. S. Haley, of Livingston, and J. F. Asbury and Dr. W. A. Moore, of Big Timber.

ON JANUARY 1 the Cedar Rapids and Marion Telephone Co., Cedar Rapids, Iowa, raised its rates, both for business and residence service. The company expects to expend $40,000 in improving its exchange building at Cedar Rapids.

INCREASE IN PATRONAGE has been so phenomenal during the past six months that the Independent Telephone Co., Council Bluffs, Iowa, has made provisions for the installation of an additional switchboard with a 1,000 drop capacity.

ONE OF THE MOST PROSPEROUS local companies in Minnesota is the Brewster-Round Lake Telephone Co., Brewster, of which A. C. Wells is secretary and general manager. Since July 15 the company has built 21 miles of toll lines, 50 miles of rural lines and put in an exchange at Round Lake.

REPRESENTATIVES OF TWENTY mutual and Independent telephone companies met at Waterloo, Iowa, last month to discuss the interchange of business. The sentiment was for "fair exchange instead of a free exchange." The companies represented form the Black Hawk Local Telephone Association. E. W. Haradon, president of the Farmers' Mutual Telephone Co., Jesup, is president of the association, and G. E. Evenson, president of the Finchford Mutual Telephone Co., is secretary.

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THE TELEPHONE EXCHANGE at Oslo, Minn., has been purchased by Hans Swanson.

A. J. MYRLAND and other citizens of Karlborg, Wis., have incorporated the Burnett County Telephone Co.

THE SEBEKA TELEPHONE CO. has been organized by residents of Sebeka, Minn., with a capital of $10,000.

A NEW SWITCHBOARD will be installed by the Farmers' and Citizens' Mutual Telephone Co., Springfield, Minn.

THE WINONA TELEPHONE CO., Winona, Minn., will install a complete automatic equipment in the near future.

CITIZENS OF COOPERSTOWN, N. D. has been organthe Griggs County Telephone Co., with a capital of $25,000.

THE CAPITAL STOCK of the Franksville Telephone Co., Franksville, Wis., has been increased from $5,000 to $10,000.

THE TELEPHONE COMPANIES doing business in South Dakota paid taxes amounting to $19,507 during the past year.

FARMERS LIVING NEAR Clear Lake, Iowa, have organized the Willow Creek Telephone Co., with a capital of $1,500.

A TELEPHONE COMPANY has been organized at Nelson, Wis., with Theodore Schaar as president. A line will be built to Durand.

THE CITIZENS' TELEPHONE CO., Mankato, Minn., has been making many additions to its toll line system during the past season.

THE MANDAN TELEPHONE Co., Mandan, N. D., is to be reorganized and an entirely new system installed at an expense of not less than $8,000.

THE ROSEBUD TELEPHONE CO. has been organized at Herrick, S. D. H. F. Slaughter, of Gregory, is interested in the promotion of the company.

A PROPOSITION will be submitted to the voters of Deer River, Minn., for the building of a municipal telephone system, and electric light and heating plant.

THE IOWA LAKE TELEPHONE CO. has been organized by the farmers living in the vicinity of Iowa Lake, near Fairmont, Minn. Construction of lines has been begun already.

LOCAL EXCHANGES will be established at Anaconda, Helena, Great Falls and other cities by the Montana Independdent Telephone Co., of which T. S. Lane, Butte, Mont., is general manager.

AT CLEVELAND, N. D., the Cleveland Telephone Co. has been organized, with Charles Anderson as manager. A local exchange will be established and a complete system of rural lines established.

THE FEDERAL GOVERNMENT will install a forest reserve telephone system in the Big Horn forest reserve in Wyoming. The line will be 100 miles long and is to cost $6,000. This is to secure prompt help in fighting timber fires.

ARTICLES OF INCORPORATION were filed last month by the Brewster-Round Lake Telephone Co., with headquarters at Brewster, Minn. Capital, $20,000. Also by the Matteson Telephone Co. of Waupaca county, Wis. Capital, $6,000.

IN THE DISTRICT COURT of Ramsey county, Minn., Judge Hallam recently filed a decision in the case of the state against the Twin City Telephone Co., holding that its three per cent. gross earning tax exempts it from any other form of taxation.

AT CENTERVILLE, S. D., prominent business men have organized the Centerville Telephone Exchange Co. Capital, $50,000, of which $26,000 is paid up. The new company will take over the Ege and Riverside exchanges and extend the service in every direction.

THOSE WHO HAVE WONDERED why the people of Littleport, Iowa, christened their new telephone line the Bryan and Roosevelt Co. will find a full explanation in the company's motto which is: "Bryan, peace to the whole world; Roosevelt, a square deal for all."

WEST AND SOUTHWEST.

THE FARMERS' TELEPHONE CO. has been incorporated at Abie, Neb., with a capital of $25,000, of which $1,500 is paid up.

ALL THE RURAL LINES in Routt county, Col., are to be united by the Routt County Mutual Telephone Co., with headquarters at Yampa.

AT ALAMAGORDO, N. M., local capitalists have organized the Sacramento Telephone Co., with a capital of $10,000, for the purpose of building town and country lines.

THE TELEPHONE COMPANIES of Clinton, Mo., will put their wires under ground in the business part of the city, in compliance with an ordinance recently passed by the council.

A NEW CENTRAL OFFICE has been leased by the Burlingame Independent Telephone Co., Burlingame, Kans., which has increased its patronage considerably under the management of T. W. Stine.

THE HOEBLING TELEPHONE CO., Okarche, Okla., a new corporation, expects to begin construction work at once. It has a capital of $6,000 and will operate in Okarche, Calumet and surrounding territory.

SEVERAL TELEPHONE COMPANIES have been started recently in Oklahoma. Among them are the Independent Mountain Telephone Co., Mangum, and the Air Line Mutual Telephone Co., Peckham.

THE HOME TELEPHONE CO., Papillion, Neb., of which I. D. Clarke is president and general manager, has made many important additions to its system duing the past three months. The company now has 650 subscribers.

AT DODGE CITY, KANS., the Arkansas Valley Telephone Co. is being organized. It will have a capital of $60,000. The plan is to connect towns on the Santa Fe road as far west as Garden City with the eastern trade centers.

THE BELL COMPANY is attempting for the third time to secure a franchise at Galena, Kans., under the misleading name of Galena Mutual Telephone Co., to compete with the Galena Home Telephone Co., a high-class Independent organization managed by M. L. Robeson.

THE COUNCIL OF ORD, NEB., has granted a telephone franchise to the Farmers' Mutual Telephone Co., a new organization which intends to cover Valley county with a network of wires. The capital is $25,000, the by-laws providing that no person can hold more than $100 of stock.

SEVERAL KANSAS COMPANIES, including the Moline Telephone Co., Longton Telephone Co., Grenola Central Telephone Co., Elk City Telephone Co., Cambridge Telephone Co. and Burden Telephone Co., have built a No. 10 metallic line as far as Elk City to connect with the Kansas City Home Long Distance Co.

AMONG THE NEW COMPANIES in Nebraska are the Naponee Home Telephone Co., Naponee, with a capital of $10,000; the South Central Telephone Co., Eustis, with a capital of $3,500; the Farmers' Co-operative Telephone Co., Maywood, with a capital of $1,500, and the Comstock Independent Telephone Co., Comstock.

THE EL DORADO TELEPHONE CO., with headquarters at Oklahoma City, has been granted a charter by the territorial secretary. The object of the company is to build and acquire telephone lines in Oklahoma and Texas and primarily, to operate exchanges at Tulsa, El Dorado and Quanah, Tex. The authorized capital is $300,000.

GRATIFYING PROGRESS is reported by the Glenwood Rural Telephone Co., Bladen, Neb., which was started in 1901 with 15 'phones and now covers three counties, with exchanges in nine districts. The manager of the exchange at Roseland, Neb., Gus Bourg, has done remarkable work in arousing public interest in local telephone systems.

W. H. ANDREWS, general manager of the Belgrade Telephone & Improvement Co., Belgrade, Neb., has recently purchased a site for a new exchange building at Spalding. The Belgrade company now operates exchanges at Belgrade, Cedar Rapids, Primrose and Spalding, with 800 telephones. It has an authorized capitalization of $500,000.

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A LOCAL EXCHANGE is to be established at Eureka, Utah, by the Utah Independent Telephone Co.

THE PURDY TELEPHONE CO., Purdy, Mo., and the Enterprise line have been consolidated.

THE SACRAMENTO TELEPHONE CO., Alamagordo, N. M., has been incorporated, with a capital of $25,000.

TWO NEW KANSAS CORPORATIONS are the Seward Farmers' Telephone Co. and the Peck Mutual Telephone Co.

THE TAOS TELEPHONE CO., Taos, N. M., has been organized by Thomas P. Martin and others, with a capital of $10,000.

THE STOCKHOLDERS of the Miller Telephone Exchange, Miller, Neb., have bought an exchange building of their own

AT OKLAHOMA CITY, OKLA., the Canadian Valley Telephone Co. has been organized by citizens of the territory, with a capital of $5,000.

A FIFTY-YEAR FRANCHISE for a telephone system has been granted by the council of Castle Dale, Utah, to C. O. Harris, of Salt Lake City. A similar franchise was granted by the county of Sanpete.

A NEW SWITCHBOARD has been installed by Manager J. E. Foote of the Hume Telephone system, Hume, Mo. The old board has been taken to Foster, where a new exchange has been established.

CHARTERS HAVE BEEN GRANTED to the Beaver & Cimmaron Valley Telephone Co., Zelma, Okla, capital $5,000; and to the Guymon & Hansford Telephone Co., Guymon, Okla., capital, $7,000.

J. C. KILLARNEY, principal owner of the Auburn Telephone Co., Auburn, Neb., has sold his stock to a syndicate of local business men who will install a new multiple board and cable plant, at an expense of $15,000.

AT CRIPPLE CREEK, COLO., the Crescent Telephone Co. has been organized to build a line between Cripple Creek, Divide and Florissant. James D. Husted is president and Joseph Long general manager.

SOUTHERN STATES

THE ORGANIZATION of the Cardenas Telephone Co., Cardenas, N. C., has been completed by the election of the fol-

A CHARTER HAS BEEN GRANTED to the Spottsylvania Telephone Co., Spottsylvania, Va. The authorized maximum capital is $10,000, minimum $3,000.

FARMERS OF KNOTT COUNTY, KY., have organized the Carrs Fork Telephone Co., with headquarters at Hindman. The company expects to build rural lines in Knott, Letcher and Perry counties.

ARRANGEMENTS ARE BEING MADE by the Rural Telephone Association of Hopkins county, Texas, to provide telephone connection from all over the county with Sulphur Springs, the county seat.

A NEW EXCHANGE BUILDING has recently been erected by the Mutual Independent Telephone Co., Grand Saline, Tex., which company is now ready to enter into active competition with the Bell company.

AN AMENDMENT to the charter of Warren & Ouachita Railroad Co. has been filed under which the company will do both a telephone and telegraph business. W. S. Hobbs, Warren, Ark., is general manager.

THE TELEGRAPHONE CO., with headquarters at Pine Bluff, Ark., is about to begin the construction of long distance telephone lines. Mack Hammett is general manager of the company which was organized with a capital of $300,000.

THE PEOPLE'S TELEPHONE CO., Loudon, Tenn., is improving its service under the direction of S. C. Robinson, who was recently elected secretary and manager in place of C. P. Taliaferro, secretary, and W. E. Huff, manager, both of whom resigned voluntarily.

AT JEFFREY, KY., the Peters Creek Telephone Co. has been organized by W. H. Smith, James Moore and others.

JUDGS G. W. RIDDLE has bought the Consolidated Long Distance Telephone Co., Dallas, Tex., for the sum of $8,000.

THE CLARENDON TELEPHONE CO., Clarendon, Tex., recently incorporated, will erect a brick exchange building, 20x24 feet.

lowing officers: President, Dr. J. M. Judd, Cardenas; vice-president, A. C. Burt, Holly Springs; secretary and manager, E. H. Ballentine, Walthal.

J. A. RITCHEY, formerly manager of the Cumberland Co.'s exchange at Laurel, Miss., is trying to organize an Independent company there.

AN AMENDMENT to its charter has been filed by the Corsicana Telephone Co., Corsicana, Tex., increasing the capital stock from $50,000 to $100,000.

THE PROPERTY of the East Kentucky Telephone Co., Mt. Sterling, Ky., has been purchased by A. J. Wilson, of Rochester, Ky., for about $11,600. The purchase includes lines at Owingsville, Clay City, Morehead and Beattyville.

THE LEWIS TELEPHONE CO., with headquarters at Indian Bottom, Ky., has just started service with a central energy equipment. Lines will be built from Cornettsville, Perry county, to Whitesburg, Letcher county, and up Rock House Creek to Colson.

THE THREE-CORNERED FIGHT in Raleigh, N. C., has been settled at last by the city council which granted a franchise to the Capital City Telephone Co. to take over the Southern Bell and Interstate exchanges. The Raleigh Telephone Co., an Independent company, of which Wm. A. Wynne is general manager, will, of course, continue in business.

THE CUMBERLAND T. & T. CO. has leased all the lines of the Rural Home Telephone Co., Owensboro, Ky. As soon as the contract was signed, the Bell, acting in its accustomed porcine way, cut off connection with the Harrison Telephone Co.'s exchange, leaving 600 people without adequate toll and local communication. Suit has been brought by the Harrison Telephone Co. to set the lease aside.

PACIFIC COAST STATES.

THE CAPITAL TELEPHONE CO., Sacramento, Cal., will establish an exchange at Roseville, Cal.

THE INLAND TELEPHONE CO. is trying to secure a franchise from the town of Pullman, Wash.

THE DIAMOND TELEPHONE CO. has been organized at Diamond, Wash., with a capital of $2,000.

AT SHERWOOD, ORE., enterprising citizens have organized the Sherwood Mutual Telephone Co., with a capital of $5,000.

THE HOME TELEPHONE CO. has been granted a 50-year franchise by the city council of Berkeley, Cal., paying therefor the sum of $47,000.

THE CITIZENS' TELEPHONE CO., Columbia City, Ore., has sold its plant to the Independent Telephone Co., Seattle, Wash. E. A. Marsh will be the local manager.

A FARMERS' TELEPHONE LINE has just been completed from Colville, 10 miles, to Echo, Wash., north of Spokane, and an exchange will be put in at the Echo postoffice.

THE STOCKHOLDERS of the Co-operative Telephone Association, Sunnyside, Wash., have changed the name of the company to Yakima Valley Telephone Co. and applied for a state charter.

T. J. MURPHY AND OTHERS are building a telephone line in the Modesto Irrigation district, Modesto, Cal. The board of directors of the district contributed $75 toward the construction of the line.

THE STAR TELEPHONE CO. has been organized by the subscribers of the Lone Star and Wolf telephone lines, in the vicinity of Auburn, Cal. C. W. Peaslee is president of the new company.

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A MORTGAGE FOR $500,000 has been filed by the Interstate Telephone Co., Spokane, Wash., in favor of the Spokane & Eastern Trust Co., to secure funds for the extension of the system to Wallace, Idaho.

THE PLANTS AND BUSINESS of the Pacific States T. & T. Co. and the Sunset T. & T. Co., have been taken over by the Pacific Telephone & Telegraph Co., a new Bell corporation. The consolidated company has been capitalized at $50,000,000. Vast improvements are planned.

THE U. S. WAR DEPARTMENT has bought 500 telephones which will be installed at the various coast defenses along the Pacific coast. They are largely for use in communication between battery and range finders, but will also be employed in connecting posts that are within reasonable distance from each other.

ACTIVE BUILDING OPERATIONS have been begun by the Colusa County Telephone Co., Williams, Cal., of which C. L. Schaal is president and general manager. The company has an authorized capital of $100,000, and will connect the towns of Colusa, Williams, Arbuckle, College City, Maxwell, Princeton, Grimes, Sycamore, Stonyford, Leesville, Sulphur Creek and Venalo, and at the same time connect up all rural communities.

TEMPORARY OFFICES have been established at 112 S. Post street, Spokane, Wash., by the Interstate Telephone Co. Wires have been installed and the new service is in operation. Most of the towns in the Idaho panhandle are reached direct by the new system. In addition to Coeur d'Alene, Rathdrum, Sandpoint, Wallace, Wardner and the mining towns in the Coeur d'Alene district the company also has wires to the headwaters of the St. Maries and St. Joe rivers, reaching all of the towns along these streams.

System at Fort Pelly, Man.

The methods adopted by progressive farmers to take advantage of twentieth century conveniences is illustrated by the installation of a telephone system at Fort Pelly. The system is being run on a comparatively small scale, but the initial success guarantees rapid extension.

E. E. Clark furnishes a few particulars we have in here.

Referring to their efficient line he says it is a barb wire and smooth wire line, the latter being used to fill the gaps between the fences. The top wire of the fence is used, and has a piece of insulating tape wrapped round it and then stapled into the post in the usual way. Our system extends from Fort Pelly, nearly 12 miles north, covering over 15 miles of wire.

We use a very powerful 'phone manufactured by a Cleveland company. It cost us about $21 laid down, but it pays for itself time and again in clearness. There are seven 'phones on the line and when we can get to work in the spring several more are going in.

In the evenings we have songs, music of all kinds, and fun among ourselves, which makes the winter evenings far more enjoyable and sociable than they have hitherto been. Those that have them would not have them taken out for three times the cost—especially the bachelors.

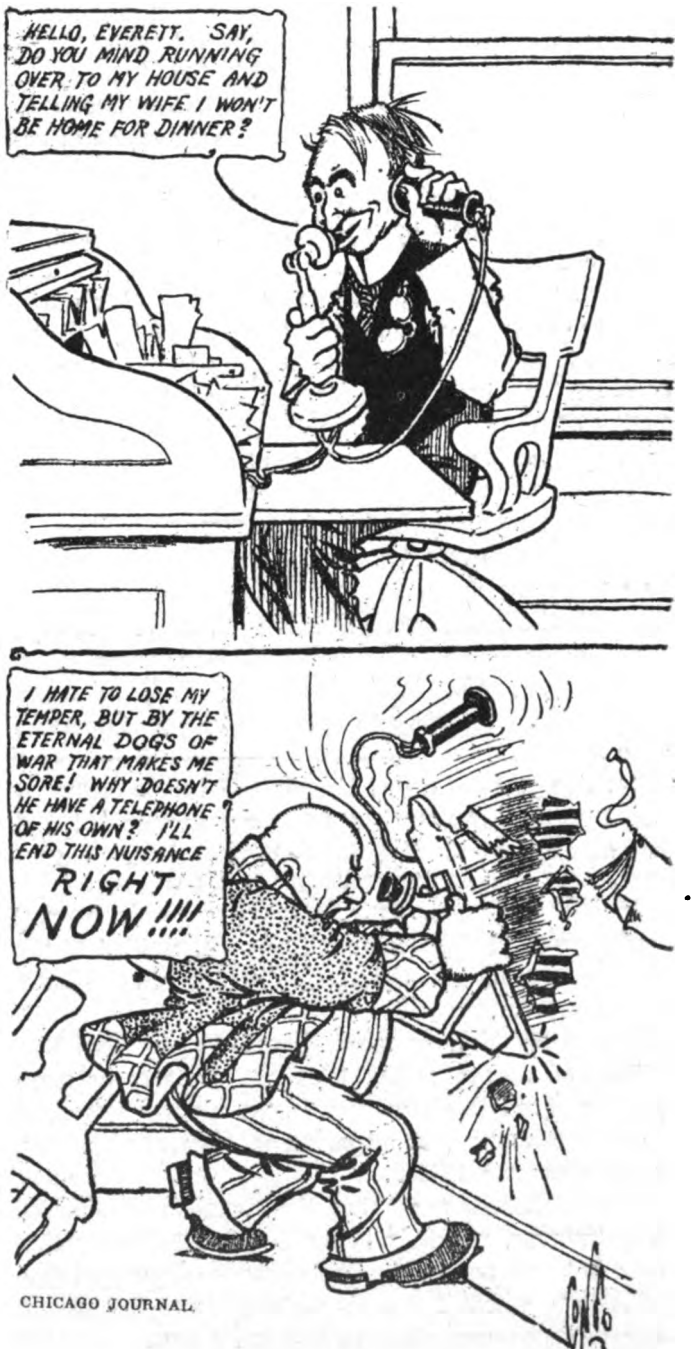
The whole system up to now including labor and everything all told, costs us a little under $35 per 'phone, and about the only expense we will have in the future will be the renewal of batteries. Next summer we hope to be able to extend the line to Kamsack, and as the Doukoobors are putting in a system connecting Veregin Siding, Sask., to their north colony, and they assure me they are going to put it through to Benito, Man., we should then have a system from Kamsack and Veregin Siding connecting with the C. N. R. company's telephone line from Benito to Swan river, Man.—a line extending over 70 miles. I may say that we are indebted for the initial move and the completion of the line to Howard Propst. We hardly know how to thank him for being the means of the convenience and sociability that the line affords.

Telephone From Moving Trains

From a railroad train running at speeds varying from 15 to 35 miles an hour out from Madison, Ind., telephone communications were held on December 21, with Louisville, Cincinnati, Madison, Indianapolis and other points by means of an appliance invented by Dr. Alva P. Jones of Louisville, Ky., for which he is said to have refused $100,000 offered by Chicago persons. The invention is said to provide the most important railroad-safeguard appliance since the invention of the air brake, as it enables train dispatchers to communicate directly with crews on moving trains, and gives such crews the same facility of communication with each other.

The test was made from a train on the Carrolton and Worthville branch of the Louisville & Nashville railroad that had been equipped for the purpose. A Louisville newspaper received the message through the apparatus while the train was going 20 miles an hour. The test was made under adverse conditions. In the party making the test, besides the inventor, were Theodore Harris and Judge Strougthers, of Louisville, James B. Duncan, of Carrolton, I. W. Orrell, manager of the Carrolton Telephone Co., and James Gale, president of the railroad. Successful conversations have been held with Cincinnati and other points, and an attempt was made to talk with representatives of the Associated Press, but owing to weather conditions in the east the conversation was not satisfactory.

THE OUTBURST OF EVERETT TRUE.


HELLO, EVERETT. SAY, DO YOU MIND RUNNING OVER TO MY HOUSE AND TELLING MY WIFE I WON'T BE HOME FOR DINNER?
I HATE TO LOSE MY TEMPER, BUT BY THE ETERNAL DOGS OF WAR THAT MAKES ME SORE! WHY DOESN'T HE HAVE A TELEPHONE OF HIS OWN? I'LL END THIS NUISANCE RIGHT NOW!!!!
CHICAGO JOURNAL

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CANADIAN NEWS AND COMMENTS

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SOUND WAVES IN CANADA

In no part of North America are the prospects of Independent telephony brighter than in the Dominion of Canada. From New Brunswick and Nova Scotia to British Columbia the Canadian public is interested in destroying the pernicious influence of the Bell monopoly which has made itself hated by its extortions and the contemptible methods by which it has sought to destroy or prevent competition.

SOUND WAVES has done more than any other publication to develop the Independent movement in Canada. Its work in this direction has been appreciated by the Independent Telephone Association of Canada which, at a meeting of its executive committee at Toronto, September 2, 1906, endorsed SOUND WAVES, the said committee passing, by unanimous vote, a resolution to publish its official announcements in this magazine.

Since then SOUND WAVES has published more Canadian telephone news, to say nothing of the most excellent Manitoba Bulletin which is printed every month, than all other telephone journals published, either in the United States or Canada, and at the present time reaches, each month, almost every Independent telephone operator in the Dominion.

For five years to come, Canada will be the center of interest in the Independent telephone movement; and every man engaged in it will have to read SOUND WAVES which, more than any other telephone journal, represents the Independent cause. It is, moreover, the only international journal in the world and, as such, entitled to the cordial co-operation of everybody interested in the Independent movement.

From a technical viewpoint, SOUND WAVES is without a rival, and no progressive telephone engineer or manager can afford to do without it. A modern telephone exchange without this magazine is very much like a church without a Bible.

The publishers trust that the Canadian section of SOUND WAVES, which is herewith printed for the first time, will be appreciated by its thousands of friends in the Dominion to whom it extends its best wishes and sincere congratulations upon their success in the past.

THE CANADIAN SHIELD

The executive of the Canadian Independent Telephone Association has decided upon a national emblem for Independent telephone companies. SOUND WAVES takes pleasure in presenting a fac-simile of the Canadian shield.

The border of the shield is dark blue, with a green maple leaf in the center of a white field. This shield will be adopted by the Independent Companies of the Dominion, and hereafter telephone users in Canada, as well as in the United States, should "look for the shield," if they want good service at reasonable cost.

ALBERTA GOVERNMENT LINE

All arrangements for the construction of the first long link of the Alberta government's telephone system in the central part of the province have been practically completed and the public works department will be ready, when the weather permits, to go ahead with the construction of the line between Edmonton and Lloydminster.

Specifications have been completed, the necessary exploratory work done and the route of the line chosen. The government is now advertising for 7,000 poles and is calling for bids from the leading telephone supply houses of Canada for the wire, insulators, cross arms and other items of construction.

The route selected will take the new line to Fort Saskatchewan on the north side of the river and, crossing there, will be carried eastward in the same general direction as the Canadian Northern, but for the greater part of the distance following the section and range lines. Every town on the railroad between Edmonton and Lloydminster will be connected with the system, and towns to the north and south will later on be connected up with branch lines.

The new line is going to be one of the finest telephone lines ever built in Canada. It will be copper wire construction throughout, central energy. It is expected that when completed the line will be absolutely free from any perceptible induction; in other words, it will be possible to talk to Lloydminster, 200 miles away, without the faintest suggestion of a buzz to blur the sound of the human voice.

The supplies which the government is purchasing in connection with the line constitute a pretty large order. There will be 400 miles of drawn No. 10 copper wire, weighing 66,000 pounds. Besides this it will take nine miles of soft copper wire to attach the main lines to the insulators, bringing the total order for copper wire to nearly 35 tons.

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It will require 35,000 pounds of galvanized iron wire for braces and lightning conductors, and the order for cross arms, pins and insulators will be alone a large item.

It is expected that before the Lloydminster line is completed the route of the line to Athabasca Landing, which is the next piece of work projected in the north, will have been selected and construction commenced.

On the Calgary-Banff line, the first line undertaken by the government, the linemen have got well into the park with their work and construction should be completed in the near future. The Calgary-Banff line is 85 miles long and it will give long distance service to Cochrane, Morley, Kananaskis, Exshaw, Canmore, Anthracite, Banff and Calgary.

NEWS NOTES FROM ONTARIO

On the 28th of December the Southwold & Dunwich Telephone Association, Limited, held its first meeting of shareholders at Iona Station, there being present about 50 shareholders. All present were enthusiastic over the success of the Association, which was organized and started construction about seven months ago. The affairs of the company were so well managed that they were able to declare a dividend at the rate of five per cent. R. Pollard was re-elected president and J. C. Lowther secretary.

The most important matter at the meeting was a proposition from the Dutton and Dunwich Company, which latter company has an agreement with the Bell Company for free interchange in the town of Dutton.

The Wallacetown and Lake Shore Company and the Southwold and Dunwich Company are strictly Independent, but have hitherto been interchanging messages with the Dutton Company with the acquiescence of the Bell Company. Over a month ago the Southwold Company obtained from the Dutton village council permission to operate in that village, and a month later, on the representation of the Dutton and Dunwich Company, it rescinded the former resolution.

The Dutton Company had been urging the Southwold Company to interchange with it, offering to give the Southwold Company's subscribers free interchange with the Bell subscribers in Dutton. When the matter was brought before the Southwold Company's shareholders, they were extremely indignant at the action of the Dutton Company in having them excluded from Dutton, after it had tied itself up to the Bell Company and contracted not to install Independent 'phones in Dutton.

The shareholders, by a vote of 42 to 2, declared positively that they would have no connection whatever with any company that connected with the Bell, and decided to remain absolutely independent.

The president, vice-president and secretary of the Wallacetown Company, who were present, addressed the meeting and complained that since the Dutton Company tied itself to the Bell it had created considerable trouble between the Wallacetown and Southwold companies.

It looks very much as if the Bell were playing a game with these rural lines, using one to block and discredit the other two. It allowed the Wallacetown people to talk over the Dutton Company's lines with the Bell subscribers in Dutton, but refused to give the Wallacetown subscribers long distance connections.

The Wallacetown Company has an agreement with the Dutton people such as was proposed to the Southwold Company, but this is terminable on thirty days' notice, and the matter will come up before the next annual meeting of the Wallacetown Company.

The incident proves how necessary it is for any Independent company to refuse to have anything to do either with the Bell or any of its sub-licensees or those who interchange with the Bell.

The Wallacetown and Southwold companies have issued a joint directory, which shows that the two lines have about 181 subscribers and are rapidly extending their lines. The Southwold Company will apply to Dutton for a franchise. The Southwold Company extends from Iona to Lawrence, and to Shedden, and although construction started only about six months ago it has 32 telephones installed, besides a large number ordered.

The Harrietsville Telephone Association, of which Dr. Doan is president, has issued a new directory which shows that this association has over 137 telephones. These rural lines are contained in a district which is about half the size of an average Ontario township. There are also included in the directory list of the Mapleton and Belmont companies. The whole directory covers 243 subscribers, all of whom live in an area less than the size of the ordinary township. This is one instance of the tremendous growth of the telephone movement in the farming community and is evidence that the independent development in Ontario bids fair to equal the Independent development in the best states of the American union.

YORK AND ONTARIO UNION

The systems of the Stouffville Telephone Co. and the Mount Albert Company are now connected, and by this junction the York and Ontario Independent Telephone Union has now, among the different companies which form the union, over 420 subscribers.

The union is composed of six companies—the Scarboro Telephone C., the Markham and Pickering Telephone Co., the Bethesda and Stouffville Telephone Co., the Central Telephone Association of Altona, the Claremont and Ashburn Telephone Co. These companies are absolutely Independent, not having any Bell connection, and cover a district of over 39 miles, by a width of about 12 miles, extending over parts of the townships of Pickering, Scarboro, Markham, Whitchurch and East Gwillimbury, and also in the incorporated villages of Markham and Stouffville. Lines of the Scarboro Company run within three or four miles of the Toronto city limits.

These telephone companies cover about 36 postoffices, and the instrument is in all but three or four offices. Three are five or six banks in this district which have these instruments.

The foregoing work has almost entirely been done within the last 24 months. Subscribers to any company have free use of the system of the whole union.

Early next spring the Mount Albert Company will connect with another Independent company, and when this is done there will be a continuous chain of independent companies along the east border of York county, extending from Lake Ontario quite close to Toronto, up to Jackson Point, on Lake Simcoe.

The union, of which A. D. Bruce, of Gormley, is president, is the outcome of the demand for Independent telephones, especially among the farming class. About 350 of the telephones now operated in this union are in farming houses. In some parts of Markham and Scar-

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boro there are four or five Independent telephones on one mile of highway.

BRITISH COLUMBIA ASKS HELP

A petition is being circulated in Ashcroft and the Cariboo, in British Columbia, asking the Dominion government to establish a telephone service between Ashcroft and Barkerville. The following are some of the reasons given:

1. The telegraph service is wholly inadquate to even partially supply the requirements of the community, reaching as it does with its offices, but a few points, whilst all intervening persons to utilize it are forced to make arduous trips consuming several days' time, or else submit to several days' delay if they rely on the stage and mail delivery.

2. The line will undoubtedly be used to such an extent by all classes as to insure its being profitable, and will greatly assist in opening the extensive mining and agricultural resources of a vast tract of country by rendering speedy communication, which is imperative frequently in mining operations a certainty.

3. If such a line were constructed the merchant and operating miner could all along the line be in quick communication with the outside world by being enabled to "call up" the most convenient telegraph office and in a few moments forward despatches which cannot now be sent without a delay of days.

4. The laborer wishing employment, or the operator desiring help would be in immediate touch with each other, and thus the wants of every ranch road-house and mine in the district would be relieved from what is at present one of the greatest, if not the greatest, drawbacks to the speedy development of the country.

5. Freighting, expressage and the general road traffic would be greatly aided, shippers being in touch with their goods all along the line when desirable.

6. The largest investments of capital and the great value of the agricultural lands already developed, and in particular the growing interest in the district from a mining standpoint, make it imperative if progress such as the outlook justifies is to be made that this modern convenience already enjoyed by most rural communities of vastly less potentialities for development be installed at the earliest possible moment.

FRONTIER TELEPHONE SUCCESS

A more rapid growth could scarcely be conceived than that of the Temiskaming Telephone Co. of New Liskeard, Ont. It was founded less than two years ago and carried to success by W. J. Middleton. With a capitalization of only about $20,000, it has spread its lines from Latchford, Cobalt, Haileybury and New Liskeard through all the north country, tapping every important point all the way to McDougall's Chutes and extending to the east past North Temiskaming to the town of Ville Marie. It has 180 miles of long distance lines. In New Liskeard alone it has 170 'phones, in Cobalt, 120, in Haileybury 52, in Ville Marie 21 and on the long distance lines, 30 subscribers.

Such a system naturally employs a considerable staff of men. Four skillful wiremen are at work all the time on construction, and two on the work of maintenance. The system has five operators. The secretary-treasurer is Mr. F. L. Hutchinson and the superintendent is Mr. Pearce.

The building of the system has been a difficult task and has been accomplished in the face of the greatest difficulties. The lines have been run for miles through the bush, slung on the limbs of trees.

But in spite of the difficulties, the plant has paid and now still further extensions are planned. For this the company purposes issuing more stock.

DELIBERATE OPPRESSION

In view of the claim the Bell Telephone Co. is making in Manitoba for fair play and just dealing in the rural districts, the following letter of A. C. Beatty, M. D., of Garden Hill, Ont., to the member of parliament for Durham, is worth reading:

"I own and operate an Independent telephone system of about twenty miles with instruments in all the leading villages in that vicinity. Dr. Russell, of Bailieboro, has a system about the same size which has always been connected with mine at Bewdley at the head of Rice lake, the people being always well pleased with the service. Dr. Russell purchased his line a few months ago from another doctor, who was so easy as to sign a contract with the Bell company for three years, and of course is responsible for the contract which his predecessor signed and which has him so tied up that he cannot even put in a new 'phone or extend his line without asking permission from the Bell monopoly. It is understood that Dr. Russell is not even permitted to exchange messages with Independent lines. Dr. Russell's line is connected with the Bell at Millbrook. On November 30, 1906, he was commanded by the Bell agent at Millbrook to cut his line from mine at Bewdley, that being the order of the Bell Telephone Co., who is now beginning to see the handwriting on the wall. Dr. Russell, fearing an action, did so. This will cause a great inconvenience to the people surrounding Bailieboro, who often have to call up Garden Hill on business. It is also a great inconvenience to the business men of Millbrook, who since the Independent 'phones were introduced, have succeeded in capturing considerable trade in the north part of Port Hope township from Port Hope, which town was not so quick at finding out that connection with Independent 'phones in the country was a good thing for trade.

"Is there any law in any half-civilized country which could force Dr. Russell to carry out such a contract? If this Bell monopoly has power to separate Independent lines and harrass half a country, why not embellish them with power to grant divorces and separate man and wife; then they would be running church and state at one and the same time. If there is anything worse in Russia, for goodness sake let us know of it, for Standard Oil in comparison with this is merely a kindergarten."

THE MANITOBA POLICY

Extract from report of Francis Dagger to Sir William Mulock, postmaster general of Canada, March 3, 1903:

"The only satisfactory method of dealing with the telephone problem would, in my opinion, be the adoption of the following policy:

"1. Government ownership and control of the long-distance lines.

"2. Government control of the local systems.

"I do not deny that such a proposal would be a radical departure from the present system, and that there may be difficulties to be overcome in the carrying out of a policy of this kind, but I believe that all efforts in this direction would be more than justified by the results."

This is the policy adopted in the Manitoba telephone legislation.

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BULLETIN NO. 4

PROVINCE OF MANITOBA TELEPHONE NOTES AND COMMENTS

Persons interested in the Telephone situation in the Province of Manitoba should address MR. F. DAGGER, Provincial Telephone Expert, Parliament Building, Winnipeg, Man.

Subscriptions and advertisements should be sent to SOUND WAVES, 860 Monadnock Bldg., Chicago, Ill.

THE PEOPLE'S VICTORY

The most remarkable campaign in the history of telephony terminated in Manitoba on December 18, 1906, in a crushing defeat of the Bell monopoly. The twelve years' record of the Independent movement in the United States has been rendered conspicuous by a series of most remarkable victories, but never before has a battle been waged over such a vast area between the people's representatives on the one hand and the Bell telephone octopus on the other, as that which has resulted in such a decisive verdict in the province of Manitoba.

In only nine municipalities out of the 124 in Manitoba in which the Bell has exchanges were the desperate pleadings, unscrupulous falsehoods and deceptive methods of the monopoly successful in securing a minority vote on the advanced telephone policy of the provincial government. In these nine municipalities there are thirteen Bell exchanges with 500 subscribers, while in the municipalities which furnished a majority vote in favor of the government there are 36 Bell exchanges and about 9,000 subscribers, including the cities of Winnipeg and Brandon, all the important centers of the province.

The result of the people's verdict is that the government of Manitoba will proceed at once to construct a long distance system throughout the province, and either the government or the municipalities will build local exchanges in those places where the people have, by their vote, decided in favor of public ownership of the telephone service. We publish eleswhere the official statement of Premier Roblin as to the future policy of his government. We are satisfied from the wisdom, foresight and consistency displayed by the premier, and his colleagues, in framing the necessary legislation, and from the marked ability, energy and thoroughness with which the campaign has been conducted, that in a comparatively short time Manitoba will have a telephone service which will provide an object lesson for the whole world.

The verdct of the people of Manitoba is the more significant from the fact that the Bell Telephone Co., with its notorious cunning, used every means in its power to convert the campaign into a conflict between the two political parties of the province—the conservatives, of whom Premier Roblin is the leader; and the liberals who constitute the opposition. In this the Bell was not wholly successful as Premier Roblin was determined that so far as the government was concerned no politics should be permitted to enter into a campaign, which was to educate the people on the question of public ownership versus private monopoly of a great utility. For this reason the government placed its side of the campaign entirely under the control of Mr. Francis Dagger, who so ably assisted the Dominion telephone committee in its enquiry at Ottawa in 1905. To Mr. Dagger was entrusted the entire work of planning the details of the campaign, selecting the speakers, preparing the necessary literature, and press matter. Under these conditions it was impossible for politics to aid the government in its presentation of the case.

The Bell Telephone Co., on the other hand, enlisted prominent liberals in every municipality to defend its interests, including the party leader, Edward Brown, and Mayor Fleming, of Brandon, one of his chief lieutenants, who utilized his position as president of the Union of Manitoba Municipalities to make a most vigorous attack on the government's policy at the municipal convention at Portage La Prairie. In addition to Bell speakers, who attended many of the government meetings, at an early stage of the campaign it become evident that local Liberals in each municipality were well coached with Bell data and arguments, and as the date of the polling drew near the political atmosphere was impregnated with the idea that whoever voted against Bell interests was not the faithful follower of the liberal leader, Mr. Brown. All this time Leader Brown, fearing the effect which an outspoken denunciation of the government's telephone legislation would have upon his party at the general election next spring, kept silent and contented himself with a declaration that he had a policy, at the same time refusing to announce it. Now that the people have decided for public ownership of the telephone service he has been forced to desert the Bell; and, in order to save himself, he declares for a policy which is in every respect identical with that of the Roblin government.

The fact that in the face of an opposition composed of a combination of political intrigue and the subtle methods of the Bell, the people have routed the monopoly in all of its important strongholds, is a tribute to the sterling principles of the people of Manitoba who have thus proved themselves to be immune from those influences which too often in the past have been associated with contests between monopolistic corporations and the public.

PREMIER ROBLIN SATISFIED

A press representative called upon Hon. Mr. Roblin to ascertain his views in connection with the vote on the telephone question. Mr. Roblin was quite willing to discuss the matter, and when asked the question as to what he thought of the result, said:

"I am certainly pleased with the vote, although, like all other elections, there were some surprises; but, everything considered, I am well satisfied. The returns so far as received from places where the Bell company has an exchange are most significant. Take the vote in Winnipeg, St. Boniface, Brandon, Carberry, Selkirk, Souris, Carman, Morris, Emerson, Hartney, Killarney, Dauphin and many other places, which shows that the people who have telephones are dissatisfied with both the price and the service and want a more efficient system and cheaper rates."

"What is the next move?" was asked.

"The first thing," was Mr. Roblin's reply, "will be to secure poles, etc., for the long-distance lines, which will be constructed as soon as the frost is out of the ground."

"Where will you begin?"

"We will commence at Winnipeg, building south to connect with the Tri-State system at the boundary and west to Portage and Brandon and intermediate points, northwest by way of Neepawa, southwest to points in southern Manitoba, and in all at least 1,000 miles of long-distance lines this year, and more if possible."

"What about the local exchanges in the municipalities?"

"They can only be constructed when a sufficient number of contracts have been secured from subscribers to justify proceed-

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ing, which number of subscribers will be a sufficient guarantee that only those using the telephones will have anything to pay. In other words, the municipalities and the government are mutually bound not to proceed until every financial safeguard has been secured."

'What will be the policy of the government in connection with those municipalities where there was not a sufficient percentage to pass their by-law?"

"The policy of the government," said Mr. Roblin, "will certainly not be to discriminate against or shut them out, as we realize that they had honest doubts by virtue of political and corporate influence that desired to mystify and mislead them. It's the intention of the government to give long-distance service to any municipality that may not have passed their by-law when they can be served by the government long-distance lines without unnecessarily increasing the length of the line."

"Then there is no doubt as to the future policy of the government in this connection?"

"No, none whatever. *The policy of the government is settled and fixed unalterably by the vote, and we consider it our duty to obey the mandate of the people."*

AS TO LOCAL EXCHANGES

The newest phase in the telephone question is a suggestion that the provincial government assume the installation and management of local exchanges and rural lines, and one, at least, of the Manitoba ministers has expressed himself as personally favorable to the idea, if the municipalities desire it; Hon. Robt. Rogers intimating this in the course of an interview.

The vote shows that where the Bell telephone company now has an exchange, the people desire public ownership and the route of the government's long distance line will naturally pass through the most profitable area. If the suggestion is followed by the government, not only will these municipalities that carried the by-law have the privilege of requesting the government to built the local exchange or rural line, but the same privilege will be accorded to municipalities along the long distance line that did not give a sufficient percentage to enable them to construct local exchanges themselves.

Mr. Rogers is in favor of promoting the good work, provided the suggestion is approved or recommended by the municipal union; and it is likely that the proposal for more extensive provincial ownership will be discussed to advantage in the near future.

In the meantime the public will be interested to know the immediate plans of the Roblin government as to the long distance line that the premier has already stated will be commenced at once. When a representative of the Winnipeg Telegram called upon Hon. Robert Rogers, minister of public works, the latter not only gave out the very important suggestion in regard to the taking over of exchanges by the government, but also indicated the determination to lose no time in the construction of the long-distance line.

"I notice that your department is calling for tenders for telephone poles. Does that mean that the government will proceed with the construction of the long distance lines?" was asked.

"Yes," Mr. Rogers replied. "The government is preparing to carry out the wishes of the people in those municipalities which, by recording a majority vote, have indicated a desire to obtain a public-owned telephone service."

"Has the government decided upon the routes to be followed by its long distance lines?"

"That is a matter for further consideration, and can only be decided when the official returns from all the municipalities have been received. I may say it is the intention to build in the first instance through those municipalities which have given a majority of votes in favor of public ownership, starting at Winnipeg and building west and south."

"What about municipal exchanges and rural lines?"

"That is a matter in regard to which it rests with the municipal councils to take the initiative, either separately or in conjunction with the Union of Manitoba Municipalites. The action of the government in preparing the telephone legislation and conducting an educational campaign has been in accordance with the desire of the Municipal union, and the government stands ready to do everything in its power to enable the people of Manitoba to obtain a public-owned telephone system giving service at cost."

"The suggestion has been made that it would be well for the government to take over the local exchanges and rural lines as well as long distance."

"Well, that is a matter entirely in the hands of the Municipal union," said Mr. Rogers. "Speaking for myself personally, I would be prepared to accept the proposition, if requested to do so by the Municial union."

A TELEPHONE SUGGESTION

The suggestion that the government construct local exchanges and rural lines in conjunction with its long distance telephone line is at least worthy of consideration. The municipalities of Manitoba doubtless want to solve the telephone problem in a manner that will best serve the interests of all, and the Manitoba government wants to help them in their very creditable aims. If governmental local exchanges will bring about better conditions more quickly than individual efforts and the proposal can be carried out on an equitable business-like basis, it would be a mistake to adhere to the original plan.

Hon. Robert Rogers has expressed himself as personally in favor of the idea, if requested by the municipal union to take over the work. Where the advantages of telephones are best known and where the people have had to submit to Bell monopoly methods, there did the bylaw carry by the greatest majority. These places have voted for municipal ownership and it is not likely that those who have suggested that the government extend its operations as indicated mean to deprive those municipalities of the profits that would accrue from owning their own plants. It is rather to be supposed that the intention would be to provide other municipalities with the advantages of public-owned telephones.

No doubt if it were feasible it would only be so where the exchanges or rural lines were tributary to the long distance line. At all events, the people along the line of the long distance system will get the long distance service anyway. One municipality that did not get a large enough percentage to assume the right to construct a municipal system, Portage, has already the right to ask the government to build there. Whether or not it would be wise to extend that privilege along the long distance line is a matter that will have to be carefully considered.

BROWN, THE OPPORTUNIST

If the leader of the Liberal party in this province continues upon his present course he will soon be better qualified to assume the role of Dr. Jekyll and Mr. Hyde, than to fill the office of premier of Manitoba. Not very many months ago we find his name heading the list of incorporators of a private corporation, applying to the Dominion government for a charter to construct and operate a telephone system throughout the province of Manitoba. Today we find him an enthusiastic champion of public ownership and promising that, if only his party is returned to power, he will proceed to establish a provincial telephone system of long distance lines and local exchanges.

Why this sudden conversion and change of heart? For the past three months we have witnessed the spectacle of Brown followers, many of whom forced themselves uninvited before unwilling audiences, denouncing the very principles which the party executive is advocating today. The opposition press was also unanimous in its condemnation of these same principles.

It is idle to deny that the ranks of the Bell apologists and supporters in the recent campaign were largely recruited from the following of Edward Brown, and that in so far as it was possible to conceal the hand of official partyism, the telephone monopoly's interests were served and served faithfully by Brown sympathizers in all parts of the province. The political atmosphere was impregnated with the idea that the faithful adherents of the Liberal party would be guilty of treason if they did not vote in the interest of the Bell Telephone Co. rather than that of public ownership.

Now that it has been demonstrated despite the influence of party, and notwithstanding the unscrupulous falsehoods by which many were led to believe they would be taxed for telephones used by other people, that the majority of the qualified property owners of Manitoba have voted in favor of public ownership, we find the leader of the liberal party come down from the fence he has been sitting upon so long and declare for the policy so consistently advocated by the Roblin government, in the vain hope that by so doing he and his followers may be permitted to carry that policy into effect.

The present legislation of the Roblin government provides for the effectual carrying out of the policy which at this late stage Mr. Brown advocates with such a flare of trumpets. Verily, the followers of this ambitious leader who were persuaded to vote "no" on the 18th of December on the strength

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of the promises of a better policy, have a just reason for complaint that they were deceived into voting against a policy which Mr. Brown by his own admission is unable to improve upon. In other words, Mr. Brown tempted them to throw away the substance for the shadow, in an attempt to gain time for the Bell monopoly.

Mr. Brown is apparently anxious to take away from the fifty-four municipalities which have passed a by-law to construct a municipal telephone system, the right of managing their own affairs in their own way. For the wishes of the municipalities or the union of municipalities he appears to have no concern.

The Roblin government gives the people the right to undertake the provision of their local telephone service if they so desire, and the present legislation also provides that the government can build and operate local systems if called upon to do so by any municipality. The minister of public works has already expressed his convictions on this point, and it only remains for the municipalities to express their wishes in the matter, and the government stands ready to act in accordance therewith.

The telephone policy of the Roblin government, says the Winnipeg Telegram, affords an immediate, clear cut, practical solution of this difficult problem, and is the consistent outcome of mature and careful deliberation. That of Edward Brown is the effervescent exuberance of a politician who a week ago had no policy to declare, and thinking people will be justified in believing that this latest move of the liberal leader reveals the hand of the opportunist rather than the statesman.

POLICY VINDICATED

Provincial Government Telephone Expert Francis Dagger was interviewed in regard to his opinion of the result of the telephone by-law vote throughout the province. In interpreting the result, Mr. Dagger said:

"I regard the result of the vote on the government's telephone legislation as a complete endorsement of the telephone policy of Mr. Roblin and his colleagues. Whatever may be said on behalf of the Bell Telephone Co. in an attempt to explain away their defeat, the very fact that only one municipality in which the monopoly have an exchange of over 100 subscribers, gave a majority vote, must be accepted as an indisputable proof of the popularity of the government policy, in those sections of country where the people know by experience the value of a telephone service, and have had an opportunity of estimating the methods of the Bell monopoly.

"Had the government, without putting the question before the electors, proceeded with a definite plan of construction with a view to covering the most remunerative section of the province, it would be impossible to have selected better points than those places where the people, by their vote, have called upon the government to establish a provincial telephone system, and these facts in themselves ensure the financial success of a provincial long distance and municipally owned telephone service.

"In regard to those districts in the rural municipalities where the farmers have little or no knowledge of the telephone and do not appreciate the value of the service to them; in view of the falsehoods and misrepresentations of Bell agents made under conditions which rendered their reputation impossible, and also of the grossly inaccurate statements made by speakers on behalf of the monopoly and contained in literature, it is not a matter of surprise that many farmers were persuaded that they would be taxed for the telephone service of other people: therefore many who from lack of experience, believed that they had no use for a telephone, voted in the negative rather than go to the trouble of satisfying themselves in regard to these false statements.

"As a whole, however, I am perfectly satisfied with the result, and taking into consideration the very brief period in which the campaign was conducted, the total ignorance of the subject in the province outside of those points served by the Bell telephone company, I do not think a stronger vindication of the government's action, against one of the most arrogant monopolies on this continent, could have been secured in any other part of the world.

"The verdict recorded by the people of Manitoba is a very high tribute to the intelligence, good sense and freedom from secret influences, which are exerted in every campaign against the interests of monopolistic corporations. Great credit is due those gentlemen who assisted as speakers in this compaign, the information which they imparted to the ratepayers in all parts of the province had a very valuable educational influence, which contributed largely to the success of the campaign, and which will bear fruits in the future the importance of which it is impossible to estimate at this time.

"The valuable municipal ownership experience of ex-Mayor Joshua Dyke of Fort William rendered that gentleman's services of special value. Mr. Dyke holds the record for having addressed more meetings than any other speaker, and while the other gentlemen who assisted me rendered invaluable service I consider that Mr. Dyke's thirty year's residence in the province and the very high esteem in which he is held in all parts of Manitoba, rendered his influence against monopolistic aggression of exceptional value."

PRINCIPLES SOUND

A Winnipeg Telegram reporter interviewed the attorney-general. Asked his views on the telephone vote Mr. Campbell said:

"I do not know that I can add anything to the complete statement of the premier.

"The position is clear and certain from the vote, viz.: The immediate construction of the long distance lines by the government and the building in conjunction therewith of lines of the municipalities who have favorably voted and the addition thereto from time to time of lines by other municipalities who desire to be attached to and take advantage of the system and have a municipal telephone service of their own.

"I desire to express my gratification that the municipalities of the province have in no uncertain way set their seal of approval to the principle of municipal ownership of public utilities, and thus so early in the history of this province. When we are laying the foundations that this far-reaching principle has been established. It means so much in our future development. Older provinces and states have had to pay dearly and suffer much from the exactions of monopolistic trusts in matters of public utilities that we will fortunately escape."

"Then you think the principle is sound?"

"Yes. It seems that everywhere the people are rising against trusts and monopolies—combining to protect themselves. The only true solution is along the lines indicated and endorsed by the municipal union—a very safe body as a rule to follow. When that body was considering the matter at Brandon in November, 1905 (at which time they suggested the course followed by the government in the legislature), a number pointed out that in many municipalities it was from their situation and scattered settlements financially impracticable for either the government to build long distance lines therein or for they themselves to build a municipal system, but it was desirable to have an indication of their views to settle the principle, and also have a discussion for its educational value along these lines. The vote just taken along these lines. The vote just taken shows the wisdom of the municipal union's advice in these respects; now throughout the length and breadth of the land not a man dare openly oppose municipal ownership, with this exception, I mean, that portion of Liberal party and press allied to and with the trusts and combines, who can always be depended on to oppose the interests of the people as a whole.

"The interests antagonistic to the movement kept in the dark and pretty well under cover, but with the aid of some corporation influenced Liberals and their press, the Bell company was able to carry on a campaign in misleading the taxpayer in many directions so that in districts which for the most part had never been served with 'phones they were able, under these misrepresentations principally as to taxation, to delay the adoption of the principle of municipal ownership. I am certain that as the government and municipal systems are extended and the beneficial results sure to be obtained are seen, that they will only be too eager, as fast as practicable, to join in with the system.

"Particularly I would like to thank the members of the Municipal union for their favorable interest in the movement, inaugurated largely by themselves. It will be observed that practically in all the portions of the province where the municipalities belong to the union, is about 80 per cent., those bodies have overwhelmingly endorsed the proposals. The Telegram has pointed out it is in those parts now served by and in need of telephone service and where it would be practical and financially sound to build and operate that the endorsement has been most outspoken and pronounced.

"Then another noticeable feature is in these localities where the full 60 per cent. was not recorded, the unincorporated villages therein were very decidedly in favor. These points will be profitable places to establish toll stations on the government long distance lines and get service at greatly reduced cost. Had the question been simply a plebiscite instead of a money

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bylaw and open to the general electorate, many of whom desire to be telephone users, the voice of the people would have been still more clear."

"You still believe as strongly as ever in the telephone as a great public utility and in the advantages to be derived therefrom by the people?"

"Yes. In my observations on this continent and elsewhere I am firmly convinced. I cannot better put it than to give you this quotation from the Electrical World. In speaking of telephones it said:

"'To our mind the greatest invention within the last thirty years is the telephone. The electric light is a priceless boon, the trolley a great utility, wireless telegraphy a wonderful achievement, but the telephone is all these and a blessed benefaction in human affairs as well. Its sublime simplicity and marvellous adaptability transcend all comparisons in the domain of pure and applied science. The extension of audible speech transmission from a stone's throw to a thousand miles, with a quieter inflection, is a work unrivalled. The world could better afford to go back to the penny dip and the stage coach than give up the telephone.'"

"Then you look confidently to the future?"

"Oh, yes. I see unbounded usefulness in its future—within five years the home or farm without this business and social necessity will be exceptional. The people are entitled to it. The trusts and their apologists may for a time delude and humbug some of them, but the party who serves the people will enjoy their confidence. From a party standpoint, if that is to looked at, I am certain it would be profitable to be opposed in this matter by that section wedded to monopolies and endeavoring to thwart the people, but I cannot, of course, but regret that they should be so blind to commit such a blunder as standing in the way of the progress, comfort and convenience of the people and ally themselves with the trusts."

LIBERAL LEADER CAPITULATES

The liberals have made a telephone policy, that is, the executive of the party organization have, and Mr. Brown has announced it to the world.

There was some hint some time ago that the liberals had a policy in the making but so varied were the positions taken by Mr. Brown that the outcome was in the nature of a puzzle. Today there are a good many liberals who will see that they guessed wrong, for Mr. Brown has capitulated to the government—he's out for public ownership.

The Winnipeg Free Press announced the wonderful discovery with some reluctance and blamed it on the provincial liberal executive that it had been decided to announce this policy. Then follows the excuse for announcing it so soon: "So that the people might have plenty of time to consider it between now and the general election."

Fearing that, while some people might criticize the liberals for disclosing such valuable prescription others might criticize them for not giving it before to the public which has just been thirsting for these drops of wisdom that Mr. Brown was to dole out, the Free Press had the caution to enquire of the leader his reason for keeping it such a dark secret. And here is the reason. It should be read at least three times. No one will deny it is good. To quote the Free Press:

Mr. Brown was asked why it was not made public before the plebiscite.

"Because," he replied, "we were most anxious not to introduce politics into municipal matters. Had our policy been announced before the plebiscite it would have created a sharp political division, and instead of the government scheme being defeated in 72 municipalities, while the vote over the whole province showed a slight majority in the affirmative (which may be taken as indicating that not even the pernicious legislation of the government was able to defeat entirely the sentiment in favor of public ownership), the result would have been that the country would have defeated the plebiscite entirely by a large majority voting against municipal ownership.

"While that would have suited the liberal policy from a party point of view, we had higher interests in mind. It would have done the province harm had it gone forth to the world that Manitoba had rejected public ownership principles. It would have raised keen party differences in the municipal contests, and would have left the real sentiment of the people in greater doubt than it is today."

Here is the way Mr. Brown makes known the essence of his plan:

"The liberal party declares emphatically in favor of complete government ownership and operation of a telephone system in this province, believing this to be the only practical solution of the question of coping with the existing monopoly, and if the party is successful in carrying the country, we undertake to proceed with the installation of such a system as soon as the necessary legislation can be passed, and the present government's acts repealed, so as to relieve the municipalities of the cost and trouble of installing their own systems."

PROFITABLE AREA

A feature of the telephone vote that augurs well for the success of the government long distance telephone line is that the municipalities most desirous of adopting public ownership are so located that the government will operate in the most profitable area. Naturally the large population in the more condensed area will give the greater returns. In the first place the cost of construction will be minimized. The cost of maintenance will also be less where there is a very large number of subscribers to the municipal system who will also make use of the provincial long distance lines.

For instance the system in Winnipeg should be most profitable and fortunately in the immediately adjacent area, including St. Boniface, Assiniboia and Kildonan, the by-law has been carried, thus giving the government a working district that will be sure of large returns. Taking the long distance line westward, it will tap a number of large telephone constituencies; North Cypress with the town of Carberry, Brandon and the municipality of Cornwallis, and Whitehead, Souris, Sifton, Hartney, Melita, Virden, with other contiguous points will all be on the long distance route, thereby increasing the profit-making power per mile.

Taking the municipalities that passed the by-law into consideration, it will be seen that the government will be enabled to build from the first into territory that will both reduce the cost of service to subscribers and augment the profits of the provincial long distance department. Later when municipalities like Portage, which endorsed the government policy but failed to vote the necessary percentage, are ready for municipal ownership, the earnings of the government system will be increased.

ROSSER WANTS PUBLIC 'PHONES

That the telephone pebiscite by-law was sure to carry in Rosser was a foregone conclusion right from the first meeting Mr. Dagger held here in Price's hall, where he so clearly explained the working-out of the whole plan. None but the very strongest "party" voters ever even thought of voting against the by-law and even those "partisans" felt so confident that the vote "yes" would be carried by such a large majority that they could safely vote "no," thereby pleasing party leaders, but not in any way jeopardizing the required 60 per cent. majority required to carry.

It is now "up to" both the municipality and the government to place all the Rosser farmers so desiring in direct telephone communication with Winnipeg as soon as possible.

This is a most convenient and appropriate municipality to put immediately to the test the practical working scheme of government-owned telephones; the municipality adjoins the Winnipeg city limits; the Canadian Northern line traverses the district; why could not the telegraph poles along this line be used to string the main telephone wire on? The telegraphic operations on this Oak Point branch of the C. N. R. cannot be gigantic, there being only one wire on the poles connecting Winnipeg, St. Laurent and Oak Point. This plan, if feasible, seems worth considering by the municipality and government.

IN THE HANDS OF MUNICIPALITIES

The suggestion that the government might establish local telephone exchanges, if the plan were recommended by the union of Manitoba municipalities, has occasioned considerable commendation.

Inasmuch as the suggestion is intended at least to still further enhance the value of the provincial telephone policy and to extend the advantages of public ownership, with which the municipal union is in sympathy, it might be well for that body to take the question into consideration at an early date.

Whatever recommendation the union would, after due consideration, make, the government would of course accept.

The Roblin government is prepared to live up to its every pledge in carrying out the comprehensive plan for which the people have voted, but it could not be expected to adopt the suggestion that has been put forward without the recommendation of the union of municipalities. It would, therefore, be advisable on the part of the municipal union to make any recommendation before the legislature adjourns.

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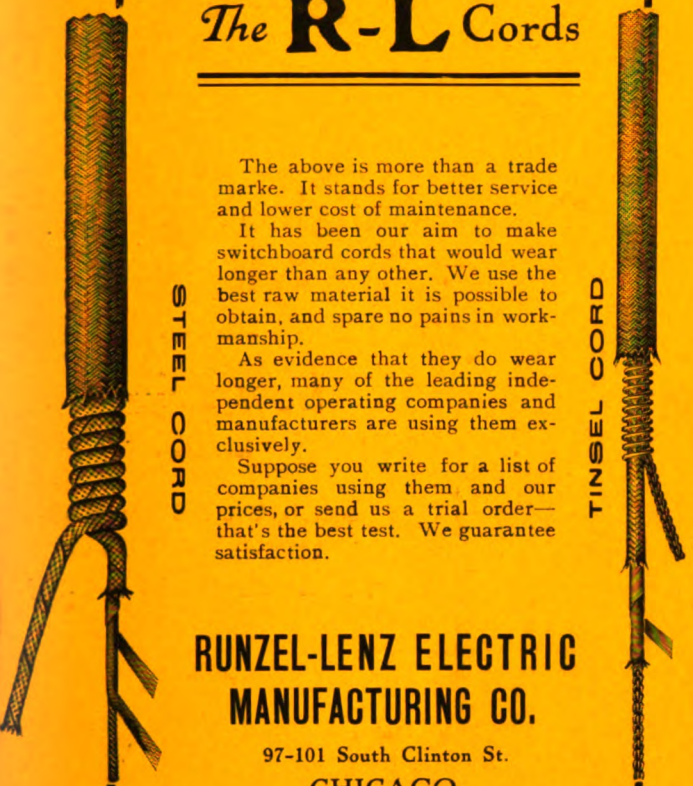

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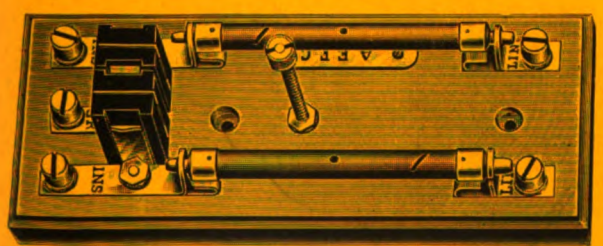

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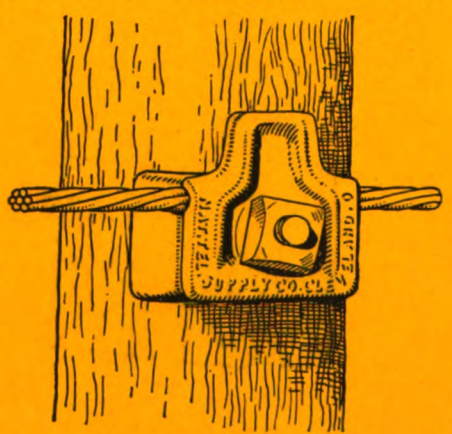

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SOUND WAVES

VOLUME XIII
No. 4

INTERNATIONAL TELEPHONE JOURNAL

MARCH
1907

HARVARD COLLEGE

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CHICAGO, MARCH, 1907

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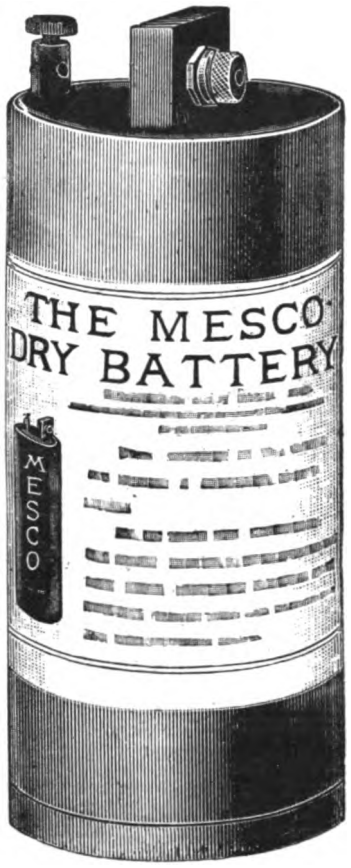

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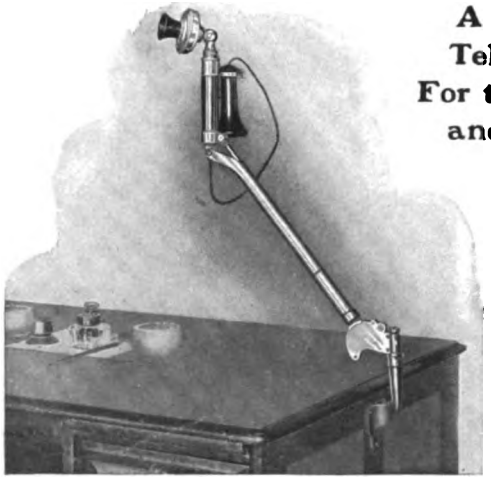

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An Advocate of Independent Telephony

VOL. XIII | CHICAGO, MARCH, 1907 | No. 4

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CHICAGO, MARCH, 1907.

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BELL FALSEHOODS.

LAST year the American Bell Telephone Company circulated a pamphlet among the bankers of the country which, although entitled "The Independent Telephone Movement," had for its object the undermining of public confidence in Independent telephone securities.

Although very cleverly distributed, the pamphlet did but little harm in localities where Independent companies had operated for a year or more. The people, being entirely satisfied with Independent service and the dividends earned by stock in local companies, paid no attention whatever to the absurd charges made by the Bell monopoly.

Bankers, however, are conservative, and in a few instances made inquiries concerning the truth of the various statements contained in the booklet.

Inquiries proved that, instead of being founded on facts, most of the information disseminated by the trust was pure invention, or garbled statements with just enough truth in them to serve the contemptible purpose of the anonymous authors and publishers.

A publication which can find no man mean enough to lend his name to the title page must, of necessity, be a collection of falsehoods. Almost every decent American citizen is willing to associate his name with truth, and had the Bell pamphlet contained the truth it would not have been sent broadcast about the continent without someone coming forward to father it.

The secrecy with which it was mailed further demonstrates that even the American Bell Telephone Company, as a corporation, was ashamed to accept responsibility for the document.

Independent telephony has been the most successful industrial movement of the past decade and has made rapid strides everywhere, sometimes under the most adverse circumstances. There may be a few instances of unscrupulous dealings on the part of Independent promoters, but the industry as a whole is clean and above reproach.

In another part of this issue are reproduced letters from twenty-five or thirty of the companies which were assailed in the anonymous Bell pamphlet of 1906. All of them should be read over carefully by the men interested in the Independent movement and submitted in person to the bankers of the country.

A lie, it is said, travels fast, but the truth always wins the race in the long run. The Bell booklet made blind charges against certain Independent companies. The latter have replied to them over the signature of responsible officials.

In the near future further material will be collected to expose the peculiar methods of the Bell monopoly, and after its publication the Boston aggregation will have a harder time to place its 91 per cent bonds than it had last month.

The American Telephone and Telegraph Company is unable today to raise money at a fair price; some of its

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subsidiary companies have not paid a dividend for years and others are in a state of disintegration, disorganized by the arrogance of its managers and crippled by wholesome competition.

Independent telephony is not afraid of any attack that may be made upon it either openly or anonymously, because it is a movement of the people, by the people and for the people. And, as a matter of course, such a movement must, as a whole, be right. The corporation or individual who can prove anything to the contrary has not yet been found.

THAT BIG BELL LOAN.

AFTER months of delay J. P. Morgan & Co. have made an effort to place $40,000,000 of the $150,000,000 four per cent convertible bond issue of the American Telephone and Telegraph Company, which was authorized by the stockholders, and $100,000,000 which was underwritten by the Morgan syndicate, in January, 1906.

Early in January of this year the American Telephone and Telegraph Company, in order to carry on its business, was forced to negotiate a $25,000,000 loan through Wall street. Before placing the three-year notes issued by the company to cover the loan, the New York syndicate stipulated that the price of the bonds underwritten in 1906 should be reduced three and one-half points to the buyers.

In other words, the syndicate secured the bonds at 91, instead of 94½, the original purchase price, besides exacting a Shylockian rake-off on the note loan. Financiers estimate that, in round figures, the cost of the loan to the Bell monopoly was slightly above nineteen per cent.

In view of the fact that the American Telephone and Telegraph Company has striven for years to undermine public confidence in Independent telephone securities, the present financial condition of the company is a clear case of chickens having come home to roost. The really deplorable financial condition of the once prosperous Bell companies is due not only to legitimate competition, but principally to the short-sighted business policy pursued by President Fish and the arrogance which he communicated to those under him.

Instead of improving the physical condition of their lines, the latter abused their competitors and antagonized the public, so that in many places Bell service stands for all that is worst in telephone operating methods and in commercial superciliousness.

All over the country the Bell companies have lost their hold, and nowhere are they strengthening their position. One large city after the other has emancipated itself, telephonically speaking, and before the close of the present year there will probably not be a single large city in the United States without a strong Independent organization. Within five years there will not be one without an Independent telephone service.

The financiers of Wall street knew that in subscribing for the American Telephone and Telegraph Company bonds they assumed a big risk, and consequently considered themselves entitled to usurious compensation. They are now selling the bonds at 92½, which price leaves them a handsome margin, but it is doubtful whether Morgan and his associates could be persuaded to underwrite another Bell bond issue at any price.

The days of prosperity of the Bell companies are gone, never to return. The public has learned to appreciate good telephone service and courteous treatment and will not again submit to the extortions and antiquated methods of the Boston trust. Wherever the Bell may do business hereafter, it must be done on as fair a basis as that established by the Independent companies; and that means that it can no longer earn extravagant profits.

Moreover, the rapid development of the Independent long distance system is sure to cut down the profits of the American Telephone and Telegraph Company to a minimum.

Taking all these facts together, the impartial observer must concede that even at 91 the buyers of the Bell bonds are taking a chance calculated to frighten a careful investor. Truly, the day of Bell desolation is drawing nigh, and nobody is regretting it except the stockholders whose money is tied up in Bell shares. Nor are the buyers of Bell bonds entitled to sympathy, because the Independent telephone press has pointed out for years the ultimate fate of these securities; and the comparative loss of business of the Bell companies and the utter inability of some of them to earn a dollar of profit have been matters of record for some time.

PUISSANT LORDS OF CUMBERLAND.

THE Cumberland Telephone and Telegraph Company, which owes allegiance to F. P. Fish, the mighty autocrat of the Bell aggregation, has recently had some trouble with the girl operators at the Memphis exchange. The girls were overworked and underpaid; their strength taxed beyond endurance, and they were forced to submit to treatment which was resented not only by them, but by the public. There being no other avenue of escape from the indignities heaped upon them, they left the employ of their taskmasters.

The long-suffering subscribers, disgusted with Cumberland methods, and the execrable telephone service which it had given them, espoused the cause of the girls and, perchance, went out of their way to make themselves disagreeable to the local Bell management.

Then the conclusion broke upon one of the Memphis hirelings that the girls were dangerous characters, and forthwith this valiant upholder of monopolistic rights armed himself with a revolver and threatened to do awful things. In his mind's eye he saw scores of female bodies —victims of his intrepidity.

Unfortunately for the embryo hero, at this time there came along a constable, or policeman, or some other minion of the law, who robbed the gallant telephone corsair of his pistol, and a prosaic magistrate sanctioned the confiscation of the weapon, fined the sanguinary mercenary and made him give a bond to be a good little fellow ever afterward.

Such an "outrage" on the privileges of the Cumberland Telephone and Telegraph Company aroused the wrath of the mighty overlord of the concern, James E. Caldwell. He gathered round about him the noble and immaculate Leland Hume, general rubber-in-chief, and William L. Granbery, his lord chief justice, and repaired to the rebellious fortress on the Mississippi river.

In all likelihood this glorious army was equipped with a full-fledged arsenal, but the only weapons they discharged were a batch of injunctions and a battery of vituperative denunciations, neither of which did any harm whatever to the girls, who wanted nothing but decent treatment and legitimate hours of work, with compensation sufficient to pay their board bills and a chance to remain decent and respectable members of society.

After much talk, which convinced nobody but the talkers, the potent grand seigneur retired with his entourage to Nashville, from whence he continues to send out red-hot thunderbolts, bewailing the depravity of the canaille of Memphis and predicting the downfall of

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American institutions in general unless the common people can be compelled to worship at the shrines of Fish and Caldwell.

In the meantime the said canaille is deeply interested in the establishment of an Independent telephone system in Memphis which promises to give efficient service at reasonable rates and whose managers believe that men and women who have to work are human beings with individual souls, ambitions and hopes.

The puissant lords of the Cumberland have lost their hold on Memphis and the South. Their scoldings are received with laughter, their threats with scorn, and not even their revolvers are taken in sober, serious earnest.

"BELLOGG" AGAINST SENTIMENT.

IT seems wondrous strange that there still are in existence Independent telephone companies which buy apparatus from the Bell-Kellogg combination. After all that has been said and done by the International Association, by SOUND WAVES and other advocates of Independent telephony, the law of self-preservation should keep the owners and managers of Independent exchanges from supplying the Bell monopoly with money and equipping their systems with the products of a corporation inimical to legitimate telephone progress.

The ownership of the Kellogg plant is no longer a matter of mere speculation. The supreme court of the state of Illinois has announced that, although secured in violation of the anti-trust laws and by peculiar means, it rests with the American Telephone and Telegraph Company, the Western Electric Company and other Bell interests.

Not being able any longer to deny these Bell affiliations, the managers of the Bell-Kellogg concern have abandoned the hypocritical pretenses which they kept up for several years and are resorting to specious arguments, as witness the following extract from a letter written by J. C. Lewis, manager of the trust's Chicago sales department, to the manager of an Illinois company:

"The Kellogg Company, regardless of the ownership of its stock, is in the Independent telephone business on business principles."

Surely it is. It has no sentiment more sacred than the almighty dollar. It is in the telephone business to get money wherever it can. From the Independents, if possible; from the Bell companies, if the Independents fail to "produce."

The past decade has played havoc with Bell dividends; and if the monopoly can hoodwink the Independents to give up their money for Bell apparatus we have what Manager Lewis would call the picture of an "Independent telephone business on business principles."

The opposition needs money badly. Banks and capitalists are no longer eager to invest in Bell securities; consequently if one of the manufacturing auxiliaries of the monopoly can be operated in a manner to secure dollars from the Independents it serves a double purpose—it weakens the Independent cause and supplies the trust with Independent money to fight Independent growth.

Every dollar paid by an Independent company to the Bell-Kellogg combine is a dangerous weapon supinely placed in the hands of the enemy by those who, instead of filling the coffers of the Boston telephone oligarchy, should assist the manufacturers of Independent apparatus.

Just as sure as there is honor among men, there is sentiment in business, in spite of Mr. Lewis' assertion to the contrary. And there is also such a virtue as devotion to a cause.

We have a slight suspicion that, unpleasant though the knowledge may be to them, the managers and employes of the Bell-Kellogg concern have admitted to their own consciences several times during the past year that there is altogether too much sentiment among the Independent telephone men of the United States and Canada. Their sales records are constant reminders. It is our belief that the year 1907 will most potently work upon the hearts and minds of Independents who in the past have been led to buy Bell-Kellogg apparatus, and that they will cease the practice.

ASSOCIATION PLANS VIGOROUS CAMPAIGN.

THE International Independent Telephone Association of America, in its seventh official bulletin of the second series, announces that the executive committee was unanimously in favor of extending the association work. Ways and means were considered, and a resolution was adopted which authorized the president and executive officers to take such action as might be necessary to raise a fund of not less than $25,000 for the use of the association. All Independent associations, operating companies, Independent manufacturing firms and supply dealers, will be urged to assist in raising the money.

The resolution providing for honorary membership in the association, to which officers of Independent companies and individuals interested would be eligible, is to be commended and should bring favorable responses from a large number. The annual dues are placed at twenty-five dollars—an amount conservatively low when it is understood that honorary membership is primarily intended to arouse greater individual interest in the association and its work and incidentally to assist in raising required funds.

To further the campaign of publicity that has been planned, the officers of the association authorized the publication of an official bulletin, to be issued monthly, and to be styled *The Telephone Chronicle*. The mission of this publication is apparent. It will contain all official matter promulgated by the association and will act as a "booster" for a greater unity among Independent operators.

Chicago has been designated as the place for the next annual convention of the association and the date has been fixed for June 4, 5 and 6. Meeting of the association's advisory board will be held June 3—the convention-proper following.

MUTUALS ARE SHORT-SIGHTED.

IN many sections of the country Independent companies are somewhat harassed by the actions of farmers' mutual telephone companies whose stockholders have entered into traffic contracts with the Bell company.

Why any farmers' company should identify itself with the Bell, directly or indirectly, passes human understanding, because in its organization and methods the Bell company stands for everything that is, on general principles, denounced by the liberty-loving American farmer.

In a certain little city in Iowa an Independent company has four subscribers to the Bell's one, and yet most of the mutual rural companies connect with the Bell. Nominally the farmers receive free service, but the townspeople have to pay toll charges to the Bell to speak with the farmers.

But that is not the worst part of the situation. The farmers, not content with ignoring the Independent company, are urging their city friends to subscribe for the Bell service, and thus have degenerated into soliciting

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agents for what is perhaps the worst monopoly in the country.

Let us suppose that the farmers succeed in driving the Independent company out of business. Do they think that the Iowa Telephone Company would continue to give them practically free connection? If they do, they are not as wide-awake as American farmers should be. The crippling or demise of the Independent company would be the signal for the establishment of a burdensome tariff which the farmers would have to accept or relinquish telephonic connection with the county seat.

Independent companies all over the country are willing to give exchange service to the mutuals at fair rates, and no more should be expected by the farmers. A telephone company is not a charitable organization. It performs its mission when it gives good service to the public at reasonable rates, and justice to its subscribers demands that it should not favor one class at the expense of another.

Wherever the Bell company has managed to tie up the farmers' mutuals, the telephone business is disorganized; and it is to be hoped that the farmers will study the economical problems of the telephone situation before entering into new contracts with their worst enemy, the Bell.

If it had not been for the Independent movement there would be mighty few farms in the United States today enjoying the convenience of the telephone, and of this fact the farmers should not lose sight when approached by the oily representatives of the monopoly.

The farmers can well afford to pay a reasonable fee to local Independent exchanges for switchboard facilities. If they do otherwise it will not be long until they will be owned, wire and poles, by the Bell.

FAMOUS MALLORY CASE DECIDED.

THE Iowa Telephone Company has been defeated in the suit brought by S. H. Mallory, of Hampton, Iowa, for being denied the use of the company's lines. Mr. Mallory sued for $4,000 damages and was awarded $200 by the jury, the instructions of Judge Wright, of Fort Dodge, favoring the plaintiff. The suit grew out of a disputed bill for $3. Mallory declined to pay the bill, on the ground that he regarded it as unjust and extortionate. The manager of the telephone company, acting under instructions from the general manager, refused Mallory the use of the company's lines until he paid the bill, whereupon the latter brought suit for damages. Judge Wright held that the company was responsible for the acts of its agents, while the defense maintained that the manager exceeded his authority.

INDEPENDENT PROGRESS IN MEMPHIS.

THE Memphis Telephone Company, Independent, which has been competing with the Cumberland Telephone and Telegraph Company here for several years on local and long distance business, has announced for sale $200,000 of capital stock and $400,000 of five per cent bonds, for the purpose of practically doubling its facilities.

The company has an authorized capital stock of $600,000, of which only $400,000 is outstanding, and it is authorized to issue $3,000,000 worth of bonds, and, with this latest issue, has outstanding only $1,000,000, thus leaving $2,000,000 in reserve for future requirements.

Local capitalists have secured the controlling interest in the company on condition that three-fifths of the stock be deposited with the Union and Planters' Bank and Trust Company for ten years, that all the officers and a majority of the directors shall be Memphis men, and that there shall be no effort to consolidate with or sell out to the Cumberland people within a specified time.

Harvey Myers, who hails from Kentucky, will therefore retire from the presidency in a short time, and will be succeeded by a Memphis man. The treasurer and one or two other officers will likewise have to retire.

The company, according to President Myers, has been earning and paying five per cent on its outstanding bonds ever since it began operations, and he is further authority for the statement that six per cent has been earned on the capital stock, but that this has been applied to improvements instead of being paid in the form of dividends. The company now has about 3,500 telephones, but announces plans for big extensions.

ADDRESS THE CHICAGO OFFICE.

HENCEFORTH, all mail matter intended for SOUND WAVES should be addressed to the publisher, Monadnock Building, Chicago. Heretofore, SOUND WAVES has been printed and mailed at Logansport, Ind.

In taking over the property the present publisher will conduct the business from Chicago, where all subscription and advertising accounts will be kept and where the publication will be edited, printed and mailed.

The transfer of the property from Logansport has not yet been completed. A large amount of the matter appearing in this number had been sent to the Indiana office and from there it was necessary that it should be returned to Chicago. As a consequence this issue of SOUND WAVES has been temporarily delayed—an incident which we shall be able to overcome with subsequent editions.

SUIT FOR A QUARTER COSTS $114.80.

A LAW SUIT involving the sum of twenty-five cents has recently been tried at Spencer, Iowa. The costs of the suit amounted to $114.80. The case grew out of a twenty-five-cent telephone charge. The Western Electric system was the plaintiff and Knox Walter the defendant. A stranger used the telephone in Walters' livery barn to talk to a neighboring town, and the telephone company alleged that Walters guaranteed the toll charge. The telephoning was done in September, and when the bill was presented Walters refused to pay it. In the meantime the operator in the telephone office had moved to Kentucky, a distance of 850 miles. Several continuances were had. The deposition was taken of the party who did the talking. It came on for trial and judgment was rendered against Walters for the twenty-five cents and the costs, amounting to $114.80.

AUSTRIA RAISES TELEPHONE RATES.

PUBLIC notice of comprehensive increases in the postal, telegraph and telephone charges has been given in Austria. Rates on local letters in Vienna and charges for money orders are also to be raised considerably. Telephone subscribers will have to pay rates from 20 to 200 per cent higher than those recently in force. The government asserts that these increases are necessary in order to provide funds for the higher pay which is to be granted to postal officials and also for the extension of the telephone system. Notwithstanding this explanation the increase has aroused much indignation, especially among the commercial classes, which point out that at a time when all civilized countries are endeavoring to provide cheaper postal facilities the Austrian government ought not to be making its own postal system more expensive.

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The Independent Telephone Movement

G By . W. Weippiert

DURING the summer and fall of 1906 the American Telephone & Telegraph Company issued an anonymous pamphlet entitled "The Independent Telephone Movement; Its Inception and Progress." The title of the pamplet was misleading—was meant to be misleading—for, instead of giving a fair history of the Independent movement, it contained a vicious attack on Independent promoters, operators and stockholders.

To add to the contemptible subterfuge of the title, the authors and publishers of the pamphlet issued it anonymously, being, evidently, in spite of their all-around meanness, ashamed to father the batch of ambiguous statements contained in its pages.

Nobody was deceived, however, as to the source from which the booklet came. Every line of it bore the earmarks of Bell prevarication, and the specious arguments and obviously twisted "news notes" contained in it were not believed by any person interested in the Independent telephone movement. The anonymous Bell distributers knew that they could not fool persons familiar with the growth and financial stability of Independent telephone properties, so the pamplet was sent only to bankers, with the diabolical purpose of prejudicing them against Independent securities.

In the pamphlet the sweeping statement was made that practically all Independent telephone companies are financial failures and that their stockholders are destined to lose the money invested in them. This in spite of the fact that the majority of Independent companies have, from the beginning, paid dividends on their stock and promptly paid the interest charges on their bonds.

Knowing this to be a fact, the managers of Independent companies paid very little attention to the Bell pamphlet, except in localities where the increase of business made it necessary to sell additional capital stock or bonds. In a few such towns the local bankers were misled by the lies disseminated by the Bell company, for a time at least, or until the authors of the anonymous booklet could be unmasked.

Where the Independents were firmly established the Bell pamphlet was laughed at, as is evidenced by the following letter from the president and general manager of the People's Telephone & Telegraph Company of Knoxville, Tenn.:

Knoxville, Tennessee, February 2, 1907.

EDITOR SOUND WAVES: The fabulous statements made by the Bell Company do not in any way disturb us, as we have had our business well in hand for several years and don't have to leave home to get money to carry it on. Our gross revenue is fifty per cent more than our capital. Yours truly,

J. C. DUNCAN.

Another letter, equally emphatic in tenor, comes from the general manager of the Citizens' Telephone Company of Pekin, Ill., who writes:

Pekin, Illinois, February 4, 1907.

EDITOR SOUND WAVES: I wish to state that last year, 1906, the Citizens' Telephone Company earned on its capital stock fourteen and one-fourth per cent. This doesn't look as if we were in receivers' hands, as our friend Caldwell of the Cumberland would have everyone believe. GEORGE H. GLASS.

The year 1906 was an exceedingly prosperous one in the Independent telephone field, and the largest demand for capital came from companies whose business had increased so rapidly that the original capitalization was entirely inadequate to take proper care of the growth, due to improved telephone service.

Let us take, for example, the state of Ohio. On March 30, 1905, that state had 196,937 Independent telephones and 668 exchanges. On October 1, 1906, there were 270,720 Independent telephones and 835 exchanges, During the same period the number of Independent toll stations increased from 1,452 to 1,663 and the number of stockholders from 17,029 to 24,650. In the same state the Bell has 141,111 telephones in service, with 275 exchanges and 839 toll stations. A similar condition of phenomenal development exists in other states, and it is therefore no wonder that some Independent companies need additional capital.

Lloyd E. Knapp.

The fact that in the state of Ohio alone there are almost 25,000 stockholders of local telephone companies give a financial stability of Independent securities, far superior to that inspired by the vaunted "cohesive" organization of the Bell trust. Back of the Independent securities are the people; back of the Bell bonds is a coterie of frenzied financiers.

Everywhere Independent securities are selling at fair prices—there being but very few exceptions to this rule—while the Bell, in order to secure a $25,000,000 loan from the Morgan crowd, had to scale the price of its bonds down to ninety-one cents, thereby paying over nineteen per cent for the three-year note loan.

But to return to the lying Bell pamphlet. In a few places it has done some harm, and in order to set the cause of the Independents right, Mr. Lloyd E. Knapp, of Buffalo, N. Y., entered into correspondence with the companies mentioned in the Bell pamphlet of 1906, for the purpose of embodying the replies and other facts pertinent to the situation in a booklet, which will also contain citations of the various difficulties under which a number of exchange systems have labored and yet have come out ahead and fought the Bell to a standstill.

SOUND WAVES has secured a number of the letters received by Mr. Knapp and takes pleasure in presenting them herewith. They are reprinted without comment or abridgement, and should furnish ample evidence of the fairness with which the Independent campaign of publicity is carried on. The responses to Mr. Knapp's inquiry have been so generous and favorable that there is much encouragement in knowing that the Independents have abundant "ammunition" to defend themselves against any onslaught that may be made by the Bell Telephone Company's press bureau.

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For the purpose of making the matter clear to every reader the "charges" made by the Bell pamphleteers are in every instance printed above the answers. The letters themselves need no comment. They carry conviction with them and demonstrate that the Bell pamphlet of 1906 is a tissue of falsehoods from cover to cover, unworthy even of its anonymous compilers and not entitled to any credence whatsoever.

A BIT OF BELL IMAGINATION.

Chamber of Commerce, Albany, New York.—Competition has increased the annual outlay just the amount we have to pay for the opposition telephone. It has not reduced rates, and has compelled merchants and others to have both telephones.

ALBANY HOME TELEPHONE COMPANY.

Albany, N. Y., December 6, 1906.

Referring to your favor of the 5th inst., relative to the enclosed article which appeared in the discussion of the situation in New York City, I beg to advise that I took this matter up with the secretary of the Chamber of Commerce, and he positively denies that a statement of this kind came from the Chamber of Commerce. Our competitors simply originated this in their own minds and no such statement has ever come from the Chamber of Commerce of Albany. Moreover, the publishers of the article of which you speak were notified to refrain from using this article in the future.

H. M. KEEF, Manager.

A FALSEHOOD DELIBERATELY TOLD.

Albion, Pennsylvania.—Albion Independent Telephone Company.—It was reported June 29, 1904, in the *Jamestown Journal* that three judgments, aggregating $5,100, had been entered against the company, all subject to immediate foreclosure. The company had been furnishing service at rates insufficient even to pay expenses.

THE ALBION TELEPHONE COMPANY.

Albion, Pa., November 5, 1906.

The money was hired to build a 25x75 two-story veneered brick. We have our exchange, 16x20, and two rooms in front on the second floor, and rent balance for $37 a month. The building cost about $5,500 when built in 1904, and is worth $7,000 today, and not for sale at that. In the last sixty days fifteen shares of stock have been sold at $140 (face or par value $100). The Bell knew what the money was for, *i. e.*, that we were building and that the money was not to run the business. The company now has 260 telephones set and is not complaining. The Bell has been coming here for the last two years to put in 200 telephones at $6 a year. Our rates are $12 to $18.

E. A. COLLINS, Secretary.

GNAWING ON AN OLD BONE.

Atlanta, Georgia.—Atlanta, Georgia, has furnished another typical example of an Independent company which failed to make good the promises of its promoters. About seven years ago a company now known as the Standard was granted a franchise. On the petition for the franchise were the names of 2,000 citizens, who promised to take the new service, which was to be furnished at about one-half the rates charged by the Southern Bell, the existing company in Atlanta. Stock to the face value of $800,000 and bonds of a face value of $550,000 were floated. The company was popular, but, nevertheless, added but few to its original 2,000 subscribers. It ran along fairly well for two and one-half years, but defaulted all interest on its bonds, and was, in June, 1902, put into the hands of a receiver. On February 5, 1903, it was sold at the upset price of $200,000 to the old bondholders. Assuming that the bonds brought $550,000 when originally sold, here was a clear loss of $300,000, plus two and one-half years' interest on $550,000.

ATLANTA TELEPHONE & TELEGRAPH COMPANY.

Atlanta, Ga., November 6, 1906.

Yours of the 3d inst. received. The main trouble with the Bell Telephone Company is, it is like a hungry dog gnawing an old bone from which the meat was extracted years ago.

Prior to March, 1900, the Atlanta Standard Telephone Company had installed in Atlanta some 2,000 or more telephones; it had a switchboard and 3,000 telephones that were supposed to be first-class, but which turned out to be worthless. The switchboard was a trunking board and not a multiple. It was the first and only board built by the company who installed it, and, of course, was a failure; a receivership resulted and the property was sold for $200,000. The new company has invested large sums of money and now has a plant account of $1,300,000. It installed first a 3,500-line switchboard, which was ready for use on the 5th of July, 1903. At that time we had but 1,100 subscribers, who stuck to us. Last July (1905) we added 1,500 additional lines to our switchboard.

The Stromberg people will finish the installation of 2,200 additional numbers this week, making a total capacity of 7,200 straight lines, besides the long distance and trunking sections of the board. We now have nearly 5,000 straight line telephones in service, besides several hundred extension desk sets, intercommunicating sets and private line telephones.

Our service is first class; we are taking in from eight to fifteen orders a day, have but one solicitor, and only send him after orders after having received the request for him to go after the same. We are from 150 to 200 orders behind with our installation all the while. We have recently put up an exchange in East Point, one of the suburbs, some seven miles from this city, which is intended to serve East Point, College Park and Harpersville.

Our building is two stories high, thirty-five to ninety feet in length, with basement, and our switchboard was built by Stromberg-Carlson with an ultimate capacity of 3,000. We have another switchboard installed in Decatur, six miles east of Atlanta, of the same type. *Our income now exceeds our operating expense, taxes, insurance and interest.*

As stated above, the Bell Company, when advertising the downfall of somebody else's property, stick to the old bones and say nothing of the new or fresh meat. If they were to advertise our success in the last three years it would not help them elsewhere.

C. J. SIMMONS, President.

TEXAS MAN SHOWS SURPRISE.

Beeville, Texas.—Rural telephone system operated by E. J. Atchley.—Sold by the sheriff April 9, 1905, to satisfy a judgment.

THE RURAL TELEPHONE COMPANY.

Beeville, Texas, November 13, 1906.

Your kind favor of the 5th inst. received and noted. I am, indeed, surprised at the reading of the sentence, "Beeville, Texas, rural telephone system, operated by E. J. Atchley, sold by the sheriff, April 9, 1905, to satisfy a judgment." Now, I had one share only in the old rural system, and there was discontent brought about by one other party, and to set matters right the lines were sold by the sheriff, and I purchased the entire system from the parties who bought it from the sheriff, the First National Bank of Beeville going my halfers, so I own the entire system, about 200 miles of lines, two exchanges, and 150 telephones, except the bank has a claim of $1,100. These are the exact conditions today, and I consider such statements as shown by your enclosure to be quite unfair, to say the least. If you so desire, you can corroborate my statement by looking up the records here.

E. J. ATCHLEY, Superintendent.

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ITEM BRANDED AS A LIE.

Buck Creek, Indiana.—Eckhart Telephone Company.—Ordered sold at assignee's sale.

THE J. C. ECKHART TELEPHONE COMPANY.

Buck Creek, Indiana, November 5, 1906.

Yours of November 3d at hand, and, in reply, we will say that our company was organized April 7, 1903, with $10,000 paid up stock. We are not now, and never have been, in the hands of a receiver. We brand the item referred to as a lie, and you may treat it as such in your booklet referred to.

We are getting along nicely, and our stock is worth 200 per cent. We have no opposition, and our patrons are all pleased with our service. We have more business than we can take care of at present offered to us.

Kindly give us information that will be a help to us in getting a copy of the publication containing the item referred to, and accept our thanks. We will try to return the favor.

J. C. ECKHART TELEPHONE COMPANY.

COMPANY ALWAYS WAS PROSPEROUS.

Cairo, Indiana.—Cairo Telephone Company.—Filed notice of dissolution in April, 1904.

CAIRO TELEPHONE COMPANY.

Cairo, Illinois, November 9, 1906.

Referring to the above and your letter of the 5th inst., beg to advise this was sent to us by the Cincinnati postoffice, as there appears to be no Cairo, Indiana.

If same is meant for this city, the statement is untrue, as the Cairo Telephone Company has been in business since 1895, has always enjoyed good business, has been behind in orders for the past fifteen months, and is regarded a very good investment for its stockholders, paying good rate of dividends.

W. R. AISTHORPE, Treasurer.

A FEW COMPLIMENTS FOR MR. FISH.

Dayton, Ohio.—In considering the telephone question, the experience of Dayton is especially interesting, as the Home Telephone Company of Dayton has the second largest automatic installation in the country, and the automatic equipment is put forth as a great economizer. An *Omaha Bee* correspondent recently visited Dayton and wrote an exhaustive article on telephone competition as he found it there. (Here follows a general arraignment of the Home Telephone Company.)

HOME TELEPHONE COMPANY.

Dayton, Ohio, November 6, 1906.

Referring to yours of November 3d, and thanking you for the information contained therein, I beg to say that as a former Bell employe, at Columbus, Ohio, I became acquainted with the gentleman who gathered some of the alleged data, and who, without any previous telephone knowledge in a practical way, compiled the figures in question, and know that he was doing the same at the instance of and probably in the pay of the Bell Company. His name was Gondon, and he posed as assistant secretary of the American League of Municipalities. The Bell Company paid for the printing of the same identical article in this city, and it was distributed in pamphlet form. This was some two years ago. In the meantime we have increased our subscription list here to over 5,000 subscribers, whereas, as you will note, he gives us credit for about 3,100.

We have not failed at any time to pay five per cent upon our bonds and five per cent upon our preferred stock, and we still live, with better prospects than we ever had, and do not consider that the matter is one that we should feel called upon to further refer to.

These arguments of the Bell Telephone Company that every other telephone company in the country is a failure have been worn threadbare, and are most ridiculous. The continued growth of the Independents has driven the forecastle of the boot of wisdom far into the coat tails of the Bell Telephone Company, so far as it applies to this section of the country, that its spinal column is sticking through its plug hat like a presidential lightning rod, and some of the Boston brown bread educated officials are beginning to realize that there are a few people in the Independent telephone business, whom they originally looked at through their short-distance spectacles as little better than the barbarians, because reared in the west, who actually know a hawk from a hand-saw when the wind is in the right direction.

I want to say to you before any denials are made of a great many things that the Bell Telephone Company has said, and before any exhaustive arguments are made as to the success of the Independent movement, that my experience with the Bell Telephone Company has been, that if we paid as much attention to the business of getting our telephones used as we did in trying to take the other fellow's subscribers, and had made less noise in calling attention to him, we would have had easier sailing than we have had, because every time we have set sails to put him out of business we bumped our heads by advertising him too much.

We have only to give good service and keep after the man who doesn't use ours, and let the Bell Telephone Company stink itself to death.

J. H. AINSWORTH, General Manager.

HAS NO BONDED INDEBTEDNESS.

Decatur, Illinois.—Citizens' Mutual Telephone Company.—Went into hands of trustee for bondholders. Outstanding bonds were $20,000, on which interest had been defaulted.

MACON COUNTY TELEPHONE COMPANY.

Decatur, Illinois, November 8, 1906.

Replying to your favor of November 7th, in reference to book being circulated by American Telephone and Telegraph Company, will explain as follows: The Citizens' Mutual Telephone Company of which it speaks was organized in the city of Decatur in 1892, being practically the pioneer Independent telephone company of the state of Illinois, with an original installation of the old Harrison International equipment. From the very start this company was made the center of fire of the Bell Telephone Company. It is not necessary for me to enter into details as to the methods of attack, but it will be sufficient to say that it used them all.

This company was organized and operated by a lot of inexperienced telephone men, this being almost necessary at this stage of the Independent telephone movement. The company continued to do business under the fire of the Bell Telephone Company until 1899, and gave a good service and had as many subscribers as the Bell Telephone Company in this city, and I will admit that this is not saying very much for either of the two companies up to that time. In 1899 there were large damage suits brought against the city of Decatur, the street railway and the Citizens' Mutual Telephone Company on account of personal injuries, and large judgments rendered therefor. The company at that time was bonded for $20,000, and it became necessary for the bondholders to foreclose on their bonds, and they did so. The affairs of the Citizens' Mutual Telephone Company were wound up, and the property and rights sold to an individual who was one of the bondholders, and immediate steps were taken to reorganize, the owner selling his rights under his purchase to the new organization (the Macon County Tele-

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phone Company), which has since been doing business under the new name and organization. The new company has, since its organization, reconstructed the plant entirely and put its cables all under ground, with about 65,000 feet of first-class up-to-date underground conduit. In the winter of 1905-06, having installed a full central energy plant, moved into new quarters and is now employing seventeen operators, together with other necessary operating force; has not a dollar of bonded indebtedness, and is actually the hub of the Independent telephone field in this section of the country, notwithstanding the many dishonest and designing influences which have been brought to bear upon it by the opposition.

C. S. HANKINS, President.

OWES NOT ONE CENT TO CITY.

Des Moines, Iowa.—Mutual Telephone Company.—A director stated that the concern had lost $60,000 since it began business and was $12,000 in debt to the city of Des Moines on its franchise tax. The company has been reorganized.

MUTUAL TELEPHONE COMPANY.

Des Moines, Iowa, November 10, 1906.

We have your letter of the 7th inst., and in reply desire to say:

The article referred to has no foundation. In fact this company owes the city of Des Moines nothing, has at present more than 5,100 telephones in operation and increasing that number at the rate of 100 per month, and the profits are satisfactory.

R. A. WALKER, Manager.

NET EARNINGS $16,000 PER YEAR.

Franklin, Pennsylvania.—Petroleum Telephone Company, also controlling exchanges at Titusville and Pleasantville, Pennsylvania. All went into receiver's hands March 9, 1903.

PETROLEUM TELEPHONE COMPANY.

Oil City, Pennsylvania, November 8, 1906.

Replying to your favor of the 7th inst., in reference to the book which was undoubtedly circulated by the American Telephone and Telegraph Company, entitled "The Independent Telephone Movement," would say that in several instances, and particularly as concerns the Petroleum Telephone Company, the statements made in the book are very misleading, and, of course, intended to be misleading.

The Petroleum Telephone Company was started in 1901, with exchanges at Oil City, Franklin, Titusville and Pleasantville, Pennsylvania. The parties who started the construction work of the Petroleum Telephone Company were largely engaged in constructing telephone systems elsewhere, and finally got into financial trouble through the necessity of rapidly extending the system so as to take care of the large growth of the business. Receivers were appointed for the Petroleum Telephone Company in March, 1903, not because the Petroleum Telephone Company was unsuccessful, but because the builders of the plant were in financial trouble elsewhere, and it was necessary to put the property of the Petroleum Telephone Company in receivers' hands, so as to separate it from the private affairs of the builders.

The company was operated by the receivers for a little less than one year, when it was turned over to the stockholders without the necessity of a sale. All the obligations of the company were adjusted and there was something over $11,000 in the treasury at the time the receivers were discharged.

The company's business has increased over sixty per cent in the past two years and is in a very prosperous condition. The Petroleum Telephone Company have net earnings over and above all operating expenses, and interest on bonds of over $16,000 per year, and have over 3,150 telephones in operation in the same territory wherein the Bell Company have less than 2,000.

WILLIAM S. PACA, General Manager.

FINANCIAL STANDING FIRST CLASS.

Forsyth, Montana.—Forsyth-Lame Deer Telephone Company.—Placed in receiver's hands.

FORSYTH ELECTRIC LIGHT AND POWER COMPANY.

Forsyth, Montana, November 16, 1906.

In reply to yours of the 7th inst., the telephone company here is owned by J. E. Edwards.

We have about eighty telephones in town and twenty-five or thirty in the country, and one line sixty-five miles long. Our financial standing is first-class.

A. B. TALBOTT, Manager.

STOCK REGARDED WORTH AS PAR.

Fremont, Nebraska.—Fremont Telephone Company.—On May 4, 1904, the directors notified the city council that they had sold out to the Nebraska (Bell) Telephone Company for seventy-five cents on the dollar. The sale meant a total loss to the stockholders of $12,000.

FREMONT TELEPHONE COMPANY.

Fremont, Nebraska, November 9, 1906.

I am in receipt of yours of November 7th, enclosing item in reference to the Fremont Telephone Company. While I am in no position to question the truth of the item, I know it to be misleading if applied to the present condition of the company.

The implication contained in the item is that the plant was offered at a loss of $12,000. About two years ago the majority of the stock was sold to the present management, which, in my opinion, is very much better than the former management. In the last two years the number of telephones has increased from 475 to 790. Two years ago the bonded indebtedness was $9,200, today it is $6,575. The service of the company is very much better than that of the Bell; it is more popular. Its construction is first-class, and in the last year earnings were approximately $6,000 on an original capital of $34,850. The total profits since organization have been something over $10,000, all of which has been placed into new construction.

At a recent election in Omaha a franchise was granted to the Independent companies, which will materially increase the profits of this company, by reason of our acquiring long distance connections and such tolls as they usually carry with them.

This company has paid nothing in the way of dividends, but its stock today is regarded as worth par, and I am quite sure the present holders would, in the event of a sale, consider no figure less than that.

WALLACE WILSON, Manager.

ALL SUBSCRIBERS ARE SATISFIED.

Huntington, West Virginia.—Mutual Telephone Company.—Rates raised on all classes.

THE HUNTINGTON MUTUAL TELEPHONE COMPANY.

Huntington, West Virginia, December 10, 1906.

Replying to your favor of the 4th inst., when this plant was installed, some twelve years ago, the rates were $12 and $24 in residence and business, respectively. After eight years of service it was found these rates were too low. And in accordance with the terms of the franchise the rates were raised to $18 and $28. This was

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done on the first of January, 1903. Sixty-five subscribers (and we had 973) did not stand for the raise and ordered their telephones out, but inside of three months every one of them came back. The Bell Company having one-third as many subscribers as we had, charge $18 and $30. We did not contemplate any additional raise, and expect to hold our own in the face of free service, which, we understand, the Bell Company proposes to give as soon as its new plant, which is now in process of construction, is completed.

LON H. HUTCHINSON, Manager.

BELL STATEMENT ABSOLUTELY FALSE.

Iowa City, Iowa.—Johnson County Telephone Company.—Operated lines in Johnson and adjoining counties. Petition for a receiver was filed April 19, 1905, alleging that the company, organized four years before, had paid no dividends. The action was brought by H. H. McDonald, of West Liberty, a stockholder.

JOHNSON COUNTY TELEPHONE COMPANY.

Iowa City, Iowa, November 12, 1906.

Replying to yours of the 8th, regarding the application for a receiver for this company last April, will say that this is absolutely false. The company changed hands in February, at which time I took charge. Our company has had a net gain of nearly 100 telephones this summer, in spite of the very hard competition by the Bell, who got a better start here on account of mismanagement for the past three years. Our toll business is on a steady increase, and we are daily extending same. Can now talk to Council Bluffs, and St. Louis is on the "coming" list.

E. H. SIDWELL, Manager.

COMPANY NOW IN FINE CONDITION.

Iowa Falls, Iowa.—Hardin County Telephone Company.—Placed in the hands of C. C. Ryan as receiver and ordered to be sold on February 25, 1905.

CENTRAL IOWA TELEPHONE COMPANY.

Iowa Falls, Iowa, November 18, 1906.

Relative to your letter of inquiry of the 8th, I have investigated the matter of sale of Hardin County Telephone Company, as per slip you enclosed, and find that such a sale took place as reported. However, that company is now in a flourishing condition, connects with us at Iowa Falls and is growing rapidly. Regarding the Independent movement in this vicinity, will say that our company has something over 500 subscribers in the city and over 300 in the rural district surrounding. The Bell has less than one-third of that number, with no apparent gain of late. H. G. CONGER, General Manager.

STOCK SELLS AWAY ABOVE PAR.

Janesville, Wisconsin.—The Badger State Long Distance Telephone Company went into a receiver's hands, but was reorganized at a considerable loss to the stockholders.

ROCK COUNTY TELEPHONE COMPANY.

Janesville, Wisconsin, November 13, 1906.

Yours of the 8th at hand. The Badger State Long Distance Telephone Company has never been in the hands of a receiver. The item you inclosed is on a par with other "stuff" the Bell Telephone Company is constantly publishing.

The Rock County Telephone Company has nearly twice as many subscribers in this city as the Bell Telephone Company, and, without ever having employed a solicitor, it grows rapidly.

It has paid ten per cent dividends from the start, seven years ago, and a twenty per cent stock dividend additional. The stockholders have their money all back already and their plant is in first-class condition. We have charged off more than twelve per cent for depreciation every year. Our stock sells away above par, and buyers are after it constantly.

RICHARD VALENTINE, Secretary.

GROSS MISREPRESENTATION.

Knoxville, Tennessee.—People's Telephone and Telegraph Company, organized in 1893. Capital stock, $30,000. Operated ten years and paid $900 in dividends. It admitted that in one year it lost $2,571.10 in operation.

PEOPLE'S TELEPHONE AND TELEGRAPH COMPANY.

Knoxville, Tennessee, November 15, 1906.

In answer to your inquiry of 1893, it is too old to consider now. We started then with $15,000 paid in. The railroad commissioners immediately came along and assessed us $48,000, and continued to follow up this line of assessment as we grew. . . .

We have all of the main business and we do not have to go away from home to get any money. All sorts of methods have been resorted to to get an insight into our business, which we always turn down.

In 1893 there was a number of the unexpired Bell patents which we could not use, hence it was important that we use any kind of device until these patents expired, and if we had waited, our franchise, which would have been amended by the Bell Company, would have been worthless.

J. C. DUNCAN, Secretary and General Manager.

PEOPLE'S TELEPHONE AND TELEGRAPH COMPANY.

Knoxville, Tennessee, November 17, 1906.

I hurriedly answered your letter yesterday, and while it was expressive it was too impious to send out, and after again looking at the statement of the Bell Company, will say that it grossly misrepresents us. The $900 was paid during the first three years, and not ten years, as stated. Since then we have been paying six per cent annually and putting back into the business the remainder. Our gross receipts are now about $60,000 annually and growing all the time.

You should see from my former letter that it is to our interest to give out no statement of our business, because the railroad commissioners assess us at $50 a wire mile and the Bell $35. There is no end to the rottenness of the Bell Company in this state.

Our franchise is unlimited and unrestricted in rates and signed up as a contract with the city. We own our building, especially built by us, and more than half of the fire district is underground, while the Bell Company has but about one square.

J. C. DUNCAN.

NO FURTHER INCREASE OF RATES.

Mankato, Minnesota.—Citizens' Telephone Company.—Increased rates on account of increased cost of operating larger exchange.

MANKATO CITIZENS' TELEPHONE COMPANY.

Mankato, Minnesota, December 8, 1906.

Yours of the 4th inst. at hand and contents noted. In reply beg to say that this company is not contemplating any further increase in rates on telephones, now or in the future. Since September, 1903, we have increased our list of subscribers to 1,200 in the city and 250 farmers.

This company has never paid less than eight per cent on common stock. The Bell Company has about

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500 city telephones and less than 100 farmers. It charges $3 for business telephones and residence telephones thrown in, or a residence telephone free three months and then any rate obtainable. W. W. KOONS, Manager.

DIVIDED BY MUTUAL AGREEMENT.

Moultrie, Illinois.—Moultrie County Telephone Company.—After being in bad shape for three years, was divided into three parts and sold to three different purchasers, the original owners receiving about $10 apiece for their shares.

LOCAL AND LONG DISTANCE TELEPHONE SYSTEM.

Mount Zion, Illinois, November 21, 1906.

Referring to your favor of the 19th inst. and the item to which it pertains, will state that several years ago a telephone line (the first in this part of the country) was constructed from Shelby county to Decatur, Illinois, connecting various towns in Shelby, Moultrie and Macon counties. After being in operation a few years it was mutually divided, the Shelby County Company taking a part and a new corporation, the Moultrie County Telephone Company, taking the remainder. This whole proposition was a sort of mutual affair, and, like most mutuals, finally needed a little capital to maintain the lines and extend the service. An estimate of this cost was made, and by a vote it was decided to sell the property of the Moultrie County Company instead of making the necessary improvements. A Mr. Davis, of Arthur, Illinois, purchased a part of these lines and the writer the balance.

It is true that the original stockholders received only about ten cents on the face value of the stock—they paid but fifty cents, as a rule, for it, and had the use of the lines for two or three years. At the time of transfer the company had but one exchange of about forty-five telephones. Mr. Davis now, I think, has two exchanges (about 400 telephones), and I have four with about 700 telephones.

Mr. Davis is a sub-licensee of the Bell, but I am not. The only reason this concern was not originally a success is that it was operated as a mutual. The stockholders, having no knowledge of the cost of operating telephone property, simply did not wish to invest their money in maintaining the lines and extending the service demanded. GEORGE B. SPITLER, Manager.

ON THE HIGH ROAD TO SUCCESS.

Paducah, Kentucky.—People's Independent Telephone Company.—A mortgage held by the People's Bank, of Wilkesbarre, Pennsylvania, was foreclosed to satisfy a debt of $252,625, and Special United States Commissioner Bagby ordered the property sold.

PADUCAH HOME TELEPHONE COMPANY.

Paducah, Kentucky, November 24, 1906.

In reply to your letter of recent date in relation to the article which appeared in a Hopkinsville paper, and which cast a reflection on the old People's Independent Telephone Company, beg to state that the old company, which has been succeeded by the Paducah Home Telephone Company, was in a bad fix, due to the fact that the promoters were a lot of inexperienced telephone men and were operating their several plants under extraordinary conditions.

The Wilkesbarre people who promoted the system had plants in Jackson, Tennessee, Ann Arbor, Michigan, and a system in Texas, and it is needless for me to say that they could not expect to successfully operate plants that were so separated.

Furthermore, they were much deceived in the men whom they employed to manage their system, who were not practical telephone men and did not have the least idea as to what was the proper and most economical method to maintain the various plants.

Originally the plant was not constructed to take care of the telephones for which they were receiving orders, and were in such a financial condition that they could not extend their system to take care of the new business.

We are now, however, in the Central Home Telephone Company of Louisville, a holding company organized to take over the plants in southern Indiana and Kentucky, and we are rapidly putting our system in Paducah on a paying basis, and by the first of January will have spent over $100,000 in necessary improvements and extensions.

We now have 1,000 telephones in operation and are increasing at a fair rate, but after the first of the year we will make a systematic canvass of the city, and I feel assured that we will get the telephones, for all the people are with us and are just waiting until we are in shape to put in the telephones, and they have promised to adopt our telephone exclusively.

Our service is far superior to that of the Bell Company, and mainly upon that standard we have built an enviable reputation, which shall be maintained under all circumstances. We are on the road to success, and in one year we shall be very much disappointed if we are not operating 3,000 telephones.

H. JEFFERY, Manager.

BELL ATTACKS HELP INDEPENDENTS.

Rockford, Illinois.—Home Telephone Company.—Sought an increase in rates in 1904 on account of getting twice as many subscribers as expected.

ROCKFORD HOME TELEPHONE COMPANY.

Rockford, Illinois, December 7, 1906.

We have your valued favor of the 5th inst., and replying to same would state that we have never made any effort to increase the rates of our telephones at any time. The franchise under which we are operating from the city of Rockford states the prices which we shall charge for our telephones, and we live up to it. We have been uniformly successful from the start, commencing with some 800 telephones, and have now installed about 2,400, with unfilled orders for four or five hundred more.

We pay no attention whatever to the insinuations or anonymous communications of the opposition company, relying on the good sense of the public to take them for what they are worth. We honestly believe that the attacks made on the Independent companies have done more to boost them than any other agency that has been employed. JOHN H. CAMLIN, Secretary.

BELL LOSING GROUND IN ST. LOUIS.

St. Louis, Missouri.—Kinloch Telephone Company.—Began business with rates of $60 and $36 for unlimited service and in five years advanced them to $72 and $48. General Manager Reber said this was necessary on account of the increase in subscribers.

KINLOCH TELEPHONE COMPANY.

St. Louis, Missouri, December 7, 1906.

Replying to your letter of the 5th inst., with enclosure referring to this company, would state that it is true this company's original rates were $60 and $36 per annum unlimited service, and were advanced to $72 and $48 for direct metallic circuit unlimited service.

We originally began business with 4,000 telephones, and found that the rates formerly charged were fair, but when our business increased over fivefold it was fair and reasonable to increase our charges, as the actual cost of

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furnishing the service increases, as you know, with a larger number of subscribers.

Our original rates were based on a fair return for our investment, and we did not intend to charge any more for our service than necessary, so that the rate for the fewer number of telephones and the increase for the larger number is the result only of fair treatment to the public in giving them the benefit of service as near the cost consistent with good business principles.

When we started our business our competitor was obtaining $150 and $80 for its service. Owing to competition these rates have been materially reduced, although the number of Bell subscribers has largely increased.

Competition here has resulted in obtaining connections with nearly twenty times as many telephones at the cost for both telephones at less than that formerly charged for one.

M. LINTON REBER, General Manager.

COMPANY HAS ALWAYS PAID DIVIDENDS.

Shelburne Falls, Massachusetts.—Heath Telephone Company.—Advanced business rate from $12 to $18 on April 1, 1906.

THE HEATH TELEPHONE COMPANY.

Shelburne Falls, Massachusetts, December 11, 1906.

Replying to your inquiry of the 5th, would say that the Heath Telephone Company began business as an association about ten years ago. It possessed fourteen miles of pole line and eighteen telephones, which it rented at $6 per year. It therefore offered connection with eighteen subscribers at thirty-three and one-third cents each per year. Later its lines were extended and its rates advanced to $12 per year, with about sixty subscribers. It then offered connection with sixty subscribers at the rate of twenty cents per subscriber per year. This rate continued until April, 1906, when it was giving telephonic connection with 800 subscribers at the rate of one and one-half cents each per year.

It should be self-evident that the United States cannot be covered and free service given over the whole country for $12 per year. It should be self-evident, also, that the state of Massachusetts even cannot be covered at that annual rate. There must, therefore, be a point where a flat rate of $12 per year will cease to maintain a telephone line and pay dividends, and the Heath Company found it had reached that point when it had 800 telephones in use. In a more densely populated territory a larger number might perhaps be given, but not in this sparsely settled community.

April 1, 1906, its rates for business telephones were advanced to $18 per year, but service without toll charges to subscribers was continued over its whole plant, covering eleven towns. This did not prove entirely satisfactory, and on July 1, 1906, the company adopted a schedule giving each subscriber the option of choosing adjoining towns containing not exceeding 250 telephones at $12 per year, 500 telephones at $14 per year, 750 telephones at $16 per year, or its whole territory at present at $18 per year, and at the time it established continuous service.

It is now offering telephonic connection with 868 subscribers at from two and one-sixteenth to five cents each per year, according to the number taken. January 1 will doubtless see the company in position to offer connections with 900 subscribers.

The company has never paid less than six per cent dividends. Our subscribers appear to be entirely satisfied with the service given, and our stock, which has a par value of $30 per share, is being sold at $35. October 1, 1903, the company had 450 telephones in use; October 1, 1904, 555; one year later, 669; and today it has 868, with orders for eighteen more, to be installed at once.

When the Heath Telephone Company was organized the writer had a New England (Bell) telephone in his office, for which he was paying $42 per year. Connection without toll charges was given with about 250 subscribers, if his memory is not at fault. Today he has both Heath and New England telephones in his office and the yearly rental for both is $39, with free connection with over 950 subscribers; the Heath Company connecting him with his customers at two and one-sixteenth cents each per year and the New England connecting him with his competitors, largely, at seventeen and one-third cents each per year.

H. NEWELL, Clerk and Treasurer.

WONDERFUL GROWTH AT SOUTH BEND.

South Bend, Indiana.—Home Telephone Company raised residence rates from $20 to $24.

HOME TELEPHONE COMPANY.

South Bend, Indiana, December 7, 1906.

In answer to your letter regarding the pamphlet of the Bell Telephone Company, entitled "The Independent Movement," wish to say that the statements in regard to South Bend are true, that we are raising our rates, business rates from $30 to $36 and residence rates from $20 to $24; but any man with common and any kind of telephone knowledge knows that telephone service such as we are giving to our 4,000 subscribers in South Bend and Mishawaka is worth the new rate. The facts of the case are as follows: When the writer came to South Bend, four years ago, he found Bell rates, business rates $48 and residence $36, and nearly everybody had party lines, mostly residence telephones were on ten-party lines in the city at $12 each. The service was simply abominable, and everybody was raising a howl about the way the Central Union or the Bell Telephone Company was treating the public.

We asked the city for a franchise at $20 and $30, until we had 2,000 subscribers, when the rate was to be $24 and $36. We did not charge the new rate until we had over 3,000 telephones in operation. Then we made a rule that all new subscribers should pay the new rate, and also where any old subscribers moved to a new place. We now have possibly, out of the 3,000, 1,000 that pay the new rate. We have had very little complaint in regard to it.

In conclusion, wish to state that it seems to me that the public ought to know what Bell statements amount to.

THEO. THORWARD, Manager.

COMPANY IS ON SOLID FOOTING.

Sumner, Iowa.—Sumner Telephone Company.—After submitting to a judgment of $5,000, the company decided to sell out at auction. The stockholders claim to have invested $45,000, besides several years' earnings in the line.

THE SUMNER TELEPHONE COMPANY.

Sumner, Iowa, December 7, 1906.

Yours of the 1st inst. at hand, and in reply to same would state that there never was a judgment against the Sumner Telephone Company, but the stockholders owed between seven and eight thousand dollars. Some of the stockholders sold their stock, a part of same being purchased by outside parties and the balance by other members of the incorporation, who were sureties on the notes for the indebtedness.

At a meeting of the stockholders it was decided that rather than furnish the money they would sell the business at auction. The stockholders and sureties bought it.

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At the present the company is on a good solid footing. However, at the time the company sold, the Bell saw its opportunity to crowd in, and at the time the writer joined the company the Bell had an exchange of about 200 telephones in this city, against about 125 of this company.

That was one year ago, and we now have over 350, against the Bell's 225. The Sumner Telephone Company is now owned by two parties. We have from 150 to 175 orders ahead all the time. We keep a gang of from ten to twelve men summer and winter, building lines and installing telephones, and it has got to the point where we do not solicit, as we have all the business we can do in what comes to us. SUMNER TELEPHONE COMPANY.

BELL IN BAD SHAPE AT TOLEDO.

Toledo, Ohio.—Home Telephone Company.—After less than two years of operation the rates were advanced from $44 and $26 to $52 and $32. The company's franchise expressly stipulated the maximum rates, but the company made the increase regardless of this, and, after a fight, was sustained by the Ohio supreme court. Commenting on the transaction the Toledo *News Bee* said:

"A more flagrant, unjustifiable, dishonorable breach of a voluntarily pledged word could hardly be imagined, but dividends on water could not be earned, it seems, in any other way. This telephone company is now doing business in Toledo under false pretenses. For had it not promised low rates it could never have secured its franchise. No one, judge or council, would have dared to admit it on any other than the terms which it has repudiated."

THE TOLEDO HOME TELEPHONE COMPANY.

Toledo, Ohio, December 12, 1906.

We are in receipt of your letter of the 5th inst., enclosing copy of statement from the Toledo papers. We desire to state our company is doing as well as we could hope for. We are increasing at the rate of from 1,200 to 1,500 a year, and have over 11,500 telephones in use at this time. We have at least double the number the Bell Company has. The Bell people have tried every possible way to regain a foothold, installing telephones free for a term of three months or longer during the summer. At the end of that period I personally believe they did not retain one-quarter of them.

As to the article you send copy of, wish to say we were enjoined some two and a half years ago against raising our rates, which was carried up to the supreme court and the decision made in our favor. The Bell Company fought us, and we feel that this was a paid article by them.

R. E. HAMBLIN, Vice-President and Secretary.

THREE THOUSAND TELEPHONES WORKING.

Trenton, New Jersey.—Home Telephone Company.—Started business March, 1896, with $150,000 capital in ten-dollar shares. Bonds were issued for an amount equal to the stock. At the end of three years service deteriorated on account of cheap materials used in construction. The company was finally sold out by the sheriff for $20,000.

INTERSTATE TELEPHONE AND TELEGRAPH COMPANY.

Trenton, New Jersey, December 3, 1906.

Replying to your favor of the 1st inst., enclosing report on Home Telephone Company at Trenton, would say the report is, in the main, truthful with the exception that the company was not sold out by the sheriff for any reason other than that the Interstate Company (which was organized at that time) bought the majority of the bonds and foreclosed the company in order to make room for its plant which went into service in Trenton in October, 1902, and at this date has about three thousand telephones working.

F. A. DEMAREST, General Superintendent.

DOCTOR FAILED AS A TELEPHONE MAN.

Webster City, Iowa.—Chamberlain Telephone Company.—This company was organized by Dr. A. W. Chamberlain, of Stratford, who secured his capital by selling stock to farmers in the vicinity of Stratford, Webster City and Marshalltown, Iowa, and opened several Independent exchanges. The fate of this competitive venture is thus detailed in the Marshalltown *Republic*, June 27, 1904:

"When the Chamberlain Telephone Company was organized the farmers in the southern part of the county, who had known Dr. Chamberlain for years, were enthusiastic in their support of the new company and readily shelled out their hard-earned money to the doctor to carry out his plans. When the final tightening up came and the doctor began to be pressed for money, it was found out that not one or two, but many of the farmers in the southern part of the county had been caught in the meshes of the telephone investment.

"The plants maintained in this city (Webster City) and the other towns of the county gave poor satisfaction. Finally the doctor discontinued the Webster City and gradually the other plants. The whole was sold for $6,000."

THE E. H. MARTIN TELEPHONE COMPANY.

Webster City, Iowa, December 3, 1906.

The facts in this case are that A. W. Chamberlain, a doctor, started to put in a few country telephones at and near Stratford, Iowa, as an aid to his business and in connection with us. After the plant had grown to quite a size Chamberlain got the free exchange idea in his head, and because we would not switch business free to and from Webster City (the county seat) he threatened to build a competitive exchange here, which he later did, severing his connections with us, and organizing the Chamberlain Telephone Company; got a franchise by special election and put in an opposition exchange to us here, giving free service, and the same old story. He lost every cent he had, and all that he could borrow from his friends and neighbors; the Chamberlain Telephone Company gave up the ghost. The franchise and junk was bought up by the heaviest losers and reincorporated under the title of the Hamilton County Independent Telephone Company and given another start with a Bell toll line connection, and it is now operating on the ragged edge of nothing with 150 telephones here against our 1,500. I understand that the Bell Company has extended it a credit of a few thousand and there is no question but that the Bell will grab it up soon and then have an opportunity to write up another history.

E. H. MARTIN.

THINKS RATES ARE TOO LOW.

Windom, Minnesota.—Windom Mutual Telephone Company.—Business rate proposed to be raised from $1.25 to $2 and the rebate of $2 per year to stockholders cut off.

WINDOM MUTUAL TELEPHONE COMPANY.

Windom, Minnesota, December 10, 1906.

Yours of the 5th inst. received. The Windom Mutual Telephone Company is now charging, in Windom, one dollar per month for residence telephones and two dollars for business telephones to everybody. Farmer telephones, one dollar per month.

We have about fifty miles of toll lines, independent of farm lines, the latter covering about 200 miles.

We operate three exchanges and have in the neighborhood of 600 telephones in service. Some have been in existence a little over three years.

We have paid one small dividend. Balance of net earnings gone into new construction.

It is a question with us whether these rates, especially on farm lines, are enough, as we will not average more than one telephone in a mile.

MUTUAL TELEPHONE COMPANY.

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An Ohio Company's Splendid Record

By Henry A. Conrad

THE history of the Newark Telephone Company, of Newark, Ohio, is one which should be of particular interest to nearly every operator, since it was one of the earliest Independent telephone companies in the state of Ohio. It obtained its franchise from the city of Newark in May, 1894; was incorporated under the laws of West Virginia the same fall; work was started early in the spring of the following year, and in a few months it was giving service to over two hundred subscribers; just as many as the Bell Company had at that time. Nearly every subscriber to the Bell system ordered his telephone out, and for a year the Bell Company installed its telephones at any point where it was allowed to do so free of charge.

The original installation was the old type Western Electric Company's common return system, before the days of the present multiple system and even before the transfer system was used. A picture of this board appears herewith, which gives an idea of the working of the system. If the operator on the first position wished to put up a connection between her board and a subscriber on the last position, she passed the cord to the operator next to her, and she in her turn to the next, and so on; the cords being long enough to reach the entire distance. This made it necessary to have the switchboards so high that the weights on the cords would clear the floor, and it was often necessary for the operator's chair to be so high that she was obliged to have a box to step on before she could sit at her position. It seems to us now a very crude arrangement, yet it gave very fair service. The company had this board in service about four years, when it became too limited to handle the increase in the business, which was about doubled in that time, and an American Electric lamp transfer board was installed. This board the company operated for about three years, at the end of which time the Central Union Telephone Company rebuilt its plant, advertised "long distance metallic service" and put four solicitors in the field. It was able to contract for something over 1,300 telephones before the home company awoke to the fact that it was time for it to get to work.

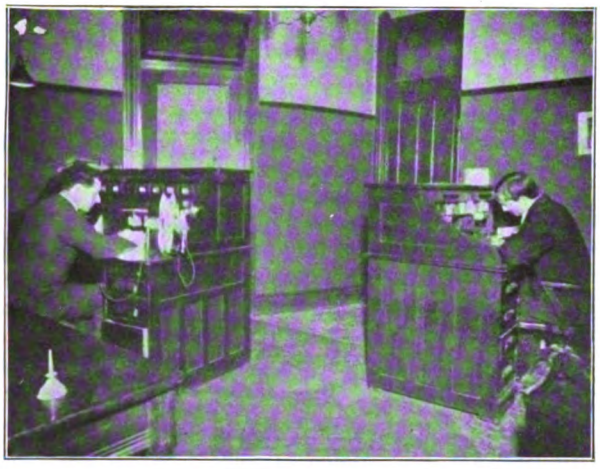
The first step necessary was to rebuild the plant throughout. With this end in view the company purchased a Sterling Electric Company central energy, multiple switchboard for 750 lines, though at this time only 600 were in use. It was expected to eventually increase to possibly 900 telephones, and when the stockholders were told that the company certainly would reach the 1,200 mark, they found it beyond their conception. The outside work was also rebuilt. From the start the new system met with the hearty approval of the public. The increase from that time was rapid in the extreme and beyond the fondest dreams of the supporters of the company. The past year has shown an increase of 634 telephones, and the company had in service on January 1 nearly 2,800 subscribers.

Four years ago the company instituted a practice of giving a prize to the operator making the most speedy answers to calls for the month, and $108 has been given out in prizes each year for this purpose. This practice has developed a good deal of rivalry among the operators, and kept the service at about a two second average. To this system in a great measure the company believes its success is due.

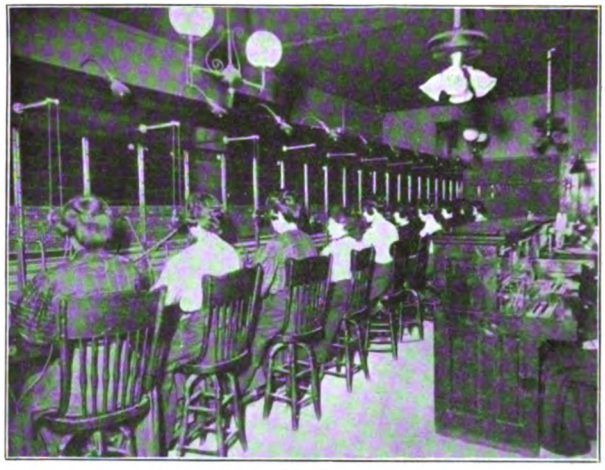
The outside construction is built on the most approved lines, being an all cable plant, with a multiple distribution. There are over 200 Bissell cable terminals in use, and over 100,000 feet of cable, extending past the city limits in every direction. A perfect network of farmer lines extend out into the country in every direction, and these connect nearly three hundred farmer line telephones with the central exchange. These rural subscribers are given the same territory as the city subscribers, and are furnished with selective lockout telephones, manufactured by the Select Telephone Manufacturing Company, and though these have been put on the market very recently, they are giving excellent service in all respects. They are very positive in their operation, and give the farmer absolute secrecy in communication whenever he wishes it. All the subscribers to this class of service have expressed themselves as being highly pleased with it in every respect.

The Newark Telephone Company also owns and operates an exchange at Granville, a town seven miles west of Newark, which has about 150 subscribers, and a Sterling Electric Company magneto army type switchboard. This exchange has about forty farmer line lockout instruments in service.

Looking at this property from a financial standpoint,



Manager's Office.



The Operating Room.

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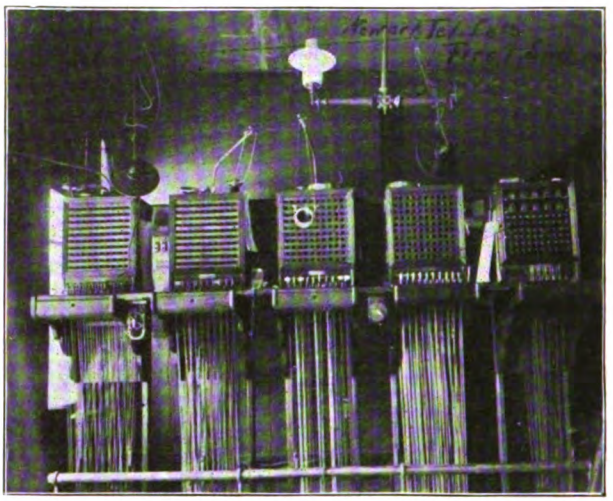
it would be hard to find a plant in a more prosperous condition. The company was capitalized at the time of its origin for $20,000, all in common stock. This was increased until about four years ago the capitalization had reached $60,000, all common stock. When the plant was rebuilt at that time the company assumed a bonded indebtedness of $40,000, $10,000 of which has already been retired. The present capitalization is $60,000 common, $90,000 preferred and $30,000 in bonds, making a capitalization of $64 per telephone. Last year the gross earnings were $45,000. Of this $22,000 was net; and after paying eight per cent on the common stock, six per cent on preferred, six per cent on bonds, and retiring $5,000 of the latter, the company showed a surplus of nearly $7,500 for the year. The above statement will not check, for the reason that all the stock referred to did not draw dividends for the full year, as it was issued at different times during the period. The total amount paid out in dividends and interest amounted to $9,500 for the year. A glance at the earnings will show that this company is operating at only fifty-two per cent of its gross earnings, and if the present ratio of growth increases the company has every hope of reaching a gross income of $5,000 per month in the next half year.

Long Distance Board.



A Switchboard with a History.

Newark Telephone Company's Cable Splicers

Newark, Ohio, although a comparatively small city, can boast of being one of the foremost in the Independent telephone movement, and it was here that the first Independent telephone meeting was held in the United States, which was really the nucleus of the present vast association. This meeting was held in the law office of Mr. Edward Kibler, one of the original board of directors of this company, and its present treasurer, and was composed of such pioneers in the telephone field as H. D. Critchfield, Gilbert Thompson, Judge Thomas, James B. Hoge and many others, who little thought at that time that they were starting a movement which would carry all before it in its battle for industrial independence.

The present personnel of this progressive company, as represented by its board of directors, is as follows: Harry Swisher, president; John C. Brennen, vice-president; Edward Kibler, treasurer; Charles Spencer, secretary; Warren S. Weiant, E. T. Rugg and R. W. Smith, who are all enterprising and successful local business men. The management of the company's affairs is vested in the general manager, Charles E. Hollander, who has officiated in that capacity for nearly five years and has watched the growth of the company from 600 telephones to present total of 2,800. Mr. Hollander was born in Somerville, Mass., and was educated at the Massachusetts Institute of Technology. Later he went into the electrical field, principally in street railway and telephone work.

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The Farmers and the Bell Company

By C. W. Roberts

"CAN a sub-licensee of the American Bell Telephone Company actually furnish telephone service to the farmer at fifty cents per month and come out whole at that price?"

These remarks and figures are based on conditions as they exist at present in the Abilene country, Texas. In order to accommodate or care for these farmer lines it will be necessary for the telephone company to construct a line to the city limits, which, in this case, will require the stringing of at least one mile of wire, at a cost of not less than $100 with the kind of construction material now in use. The company has not a line at present of equal length that did not cost it much more than that amount.

It will be necessary to use one drop on the switchboard for each farmer line. It will be necessary to have an operator to answer calls over that line. It will be necessary to have a trouble shooter to keep that line clear of trouble within the city limits. As it would not be fair to apply all of the expense of this operator-lineman to this particular line, let us use as a basis the average cost per line to operate the entire exchange.

ESTIMATED COST TO OPERATE EXCHANGE IN ABILENE.

Manager's salary, per month	$100.00
Two linemen, salary per month	90.00
One messenger boy, salary per month	15.00
One collector, salary per month	25.00
Ten operators, salary per month	250.00
Rent of building, per month	35.00
Keep of one horse, per month	15.00
Water, light, fuel, power, incidentals, per month	25.00
Maintenance (battery cords, etc.) per month	35.00
Franchise tax, gross receipt tax, adv. tax, per month	30.00
Total monthly operating expenses, Abilene exchange	$620.00

Divided by the number of telephones in operation in the exchange, say 500, we find the average operating cost per telephone per month to be $1.24. As it does not own its telephones, but rents them of the Western Electric Company at twenty cents per month for a complete telephone, we will have to add to the average operating cost per telephone as follows: Rental to pay to Western Electric Company, per telephone, say 50 cents; interest on investment, line to city limits, say $100; one prop on switchboard, say $10; total investment, $110, which, at six per cent per annum, amounts to 55 cents per month. So we have the following:

Average operating cost per telephone, per month	$1.24
Rental paid Western Electric Company, per month	.50
Interest on investment, per month	.55
Total average operating cost per telephone, per month	2.29
Less amount received from farmer for rental	.50
Showing a net loss per farmer telephone, per month	$1.79

The company had several solicitors in this section for quite a while canvassing this new business, none of which expense is included in this estimate. We have never heard of the Bell making a similar proposition to the farmer in sections where it has no Independent competitor.

As an illustration, take Dallas, the metropolis of the state, where it has everything its own way. The company is not making the Dallas county farmers any such proposition as it is submitting to the Taylor county farmers. Is this because it loves the Taylor county farmer more than it does the Dallas county farmer? I hardly think so. The Bell Company does not love Mr. Farmer. If it cannot use him to its advantage, it does not care for him. The Bell Company is just like all the other trusts; if it cannot control it will ruin, if possible.

The Independent telephone people have been trying for some years to secure a franchise in the city of Dallas so that they might put in an Independent telephone exchange in competition to the Southwestern Telephone and Telegraph Company, but as yet they have not been successful. Do you suppose the councilmen are so infatuated with this concern (solely for love for it) as to give it exclusive use of their city? I think not. Dallas claims a population of 65,000, and the Southwestern Telephone and Telegraph Company claims Dallas is not large enough for two telephone companies. Abilene claims a population of 10,000, and the Southwestern Telephone and Telegraph Company claims that Abilene is plenty large for two telephone companies. Consistent, isn't it?

Only a few years back the Bell Company would not condescend to put in exchanges in cities of less than 15,000, and charged $36 and $75 per annum rental for residence and business telephones, respectively. At that time the Bell Company would not as much as notice a farmer, but now the farmer is "Big Ike." The company sees where it can use him to its advantage, and it is after him. He can get his telephone service at 50 cents per month, when the city subscribers have to pay much more for service.

The Bell Company claims it can furnish the farmer service at 50 cents per month at a profit, or, rather, without loss. Why can it not furnish service to the city subscribers at the same price? Doesn't it stand to reason it can furnish one as cheap as the other? Consistency, thou art a jewel!

If it is a fact that the company can actually furnish the Taylor county farmer service at 50 cents per month, wouldn't you like to know how much profit it is really making off the Dallasite when he is paying $2 and $5 per month for residence and business, respectively? Again, would this not be a good object lesson to the Dallasites if they could only be educated to see what competition in telephony brings about?

It is evident that competition is the direct cause for this state of affairs in Taylor county; hence, doesn't it stand to reason that it would accomplish the same results for Dallas and Dallas county?

Who ever heard of legitimate competition in other lines of business hurting any city? It goes without saying that competition is the life of trade. Why try to make an exception of Dallas in telephony? Is it not a fact that Dallas at present is enjoying better telegraph facilities—better service for less money—than it did before the advent of the Postal Telegraph Company? Not only did it affect Dallas, but the whole state is enjoying a lower rate of telegraph tolls on account of the competition.

Competition in telephony in Dallas, in my opinion, would bring about the same results, only in a much larger proportion than any other public service utility.

From the foregoing it will readily be seen that the only consolation the Bell people can get out of the farmer line business is the fact that it is willing to lose this amount ($108 in five years) as an advertising scheme in

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order to get the farmer to build lines in competition to the Independent telephone companies. It is my candid opinion this is the sole object in making the proposition in this section. My consolation is the fact that the farmer will learn after a while who his friend is, and repent.

The Independent telephone people concede that they cannot furnish the farmer telephone service at 50 cents per month without a loss; still, we can demonstrate that we can and do operate our exchange in the same town at a less cost than the Bell sub-licensee does.

Now, let us view it from the standpoint of the farmer. By the terms of the agreement he and his associates are to construct their line to the city limits, maintain it, sign a five-year contract at fifty cents per telephone per month, with eight telephones on the line.

To accomplish this it is necessary that they build a line twelve to twenty miles out to some convenient point centrally located to that section, and there the lines will radiate, possibly by using one wire of a barbed wire fence or any kind of a line that happens to suit their fancy, which, in all probability, will be among the cheapest that can be put up, to each farmer's house.

Estimated cost per mile for overhead line using 2" by 4" 9' lumber for poles:

Forty pieces 2x4"×9'=240, at $2.50	$6.00
One mile No. 12 smooth fence wire	7.00
Forty knobs, fifty cents; hardware, fifty cents	1.00
Expense nailing on knobs and 2x4" pieces	.50
Stringing and tying in wire	2.00
Hauling and distributing material	2.00
Total cost per mile, cheapest construction	$18.50

Cost per mile using 4" by 4" 16' pine poles:

Thirty poles 4x4"×16'=640 feet, at $2.50	$16.00
One mile No. 12 smooth wire	7.00
Thirty knobs and hardware	.50
Stringing wire	2.00
Digging holes	3.00
Distributing material	5.00
Total cost per mile	$33.50

Cost per mile using cedar or cypress 18-foot poles:

Thirty poles, at seventy-five cents	$22.50
One mile No. 12 wire	7.00
Knobs and hardware	.50
Stringing wire	2.00
Digging holes	5.00
Distributing materials	5.00
Total cost	$42.00

Hence the line will cost from $18.50 to $42 per mile, according to kind of material used for poles and the number of poles per mile. Estimating that it will average two miles of wire to reach each farmer on the line, we find each farmer will have an investment as follows:

Two miles telephone wire	$37.00	to	$84.00
Five years' telephone rental	30.00	to	30.00
Total cost of five years' service	$67.00	to	$114.00

To say nothing of the expense of keeping the line up. You must guess what that will amount to, for I cannot estimate it for you.

There are a number of other things, too, that affect the expense account as well as the efficiency of the service. From this you see this service is costing the farmer more than fifty cents per month, and he is already beginning to see "where he is at," for a number of these farmers have already been in to see and consult me in the matter.

A majority of them were stockholders in one of the farmer lines now being built. Their views differed widely. Some feared that I was going to take my lines down as soon as these farmer lines were put up, and came in to plead with me to let my lines remain. Others went so far as to say that I would be compelled to take them down then as there would be no business left for me. They were generous enough, however, to offer to buy my lines at the price of scrap iron junk. Some were really seeking my advice in the matter. These last were thoroughly convinced, and profited thereby. Some of the others admitted they had been deceived, but having put up their money into material to construct the line, the only way they could get out now was to find some one to buy their interest. The would-be purchaser of my line is of the same opinion still.

I asked the first farmer if he could afford to sell his cotton for less than it cost him to produce it. He replied he was not looking out for the telephone man's interest, but for himself, and was going to take advantage of the bargain. He now admits he has $20 invested in material for a telephone line, but no work has been done on the line. He will either have to work on it himself or pay some one to do it, so it will cost something more, as there is no money in the treasury. Hence, at the expiration of his five-year contract his telephone service will have cost him $50 over and above the time and expense of maintaining the line. If the actual figures could be had I dare say this same party during his whole life (he is about fifty years old) has never paid out half of that amount for his telegraphing and telephoning combined, and now he is entering into a contract by which his telephoning alone will cost him the above amount ($50) and more in five years. When he has had time to reflect, do you suppose he will still be of the opinion that it is the bargain he thought it was? I hardly think so.

Farmer No. 2 says that the solicitor made him this proposition: "If you and seven of your neighbors will form a company and build a telephone line to the city limits of Abilene, twelve miles, at a cost of not exceeding $30 each, the Southern Western Telephone and Telegraph Company will rent you a telephone at fifty cents per month and agree to give you not only connection with Abilene, but you can talk free of charge to any point in the state reached by our line." To which he replied: "I have known the Independent man of that place for twenty years, during which time he has been identified with every interest for the upbuilding of this county, of which I am a part and parcel. He has contributed to the building of our school houses and churches; he even built a telephone line to our little village, that furnished us facilities for communicating with our neighboring counties. Why should I at this late date patronize you in preference to him?"

When you compare the facts and figures you will find that the farmer is paying over one dollar per month for this service that is not worth more than fifty cents, from the fact that this is the valuation the company itself voluntarily places on the service. The farmer can rest assured that it is not worth a cent more, for the company concedes it, and the farmer will find it out later. The writer has been in the telephone business for twelve years and has made a close study of it in its every phase, and knows whereof he speaks.

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Simultaneous Telephone and Telegraph

By Frank M. Slough and M. E. Taylor

FOR a long time the first expense for apparatus used for simultaneous telephone and telegraph service retarded commercial recognition of its industrial value, due to the fact that expensive and complicated equipment had been supposed necessary for its operation, besides the results were very uncertain. Long and careful study, with practical results, have, however, within the last few years placed simultaneous telephone and telegraph in such harmony that all of the larger long distance toll companies are adopting it on account of the large revenue, which can be secured with a very small extra expense by leasing the wires for telegraph service to parties desiring the same, such as brokers, newspapers, etc.

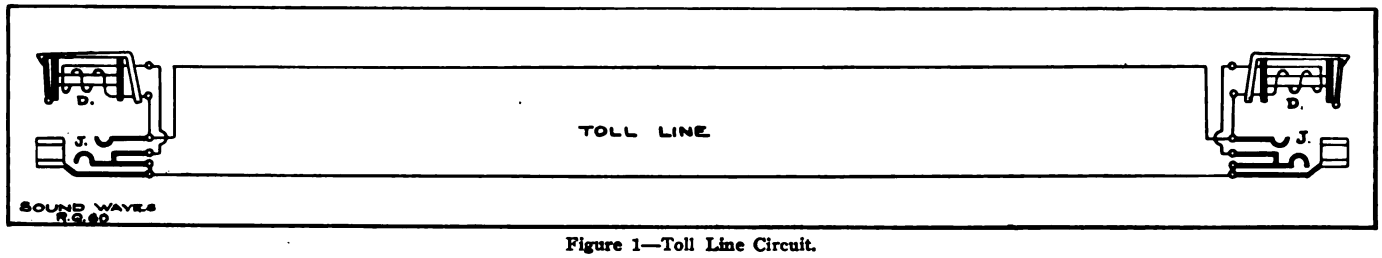

Figure 1—Toll Line Circuit.

In taking up this subject the writers have decided to discuss only the practical methods such as have been used under service conditions with good results; also to give briefly the different methods by which these results may be obtained, and as far as possible explain the advantages and disadvantages of the several methods, which may be divided into two systems—simplex and composite.

Simplex systems are based on the Wheatstone's bridge principle, and are capable of rendering only one telegraph circuit from one metallic line, while the composite systems are based on the different effects which the alternating current has on condensers and impedance coils, and provides for two complete telegraph circuits over the same metallic line.

We will first take up the simplex system, as it is the simplest and the first that was used to any great extent. It will be necessary to subdivide this method into the impedance and repeating coil systems, either of which have their own advantages.

Figure 1 shows a toll line which represents the natural condition of any toll circuit as it exists between two exchanges described as *A* and *B*.

The first step in cutting in a telegraph circuit by the impedance simplex method without interfering with the telephonic use of this line is clearly shown in Figure 2, in which it will be noted that an impedance coil is cut in at each end of the line, *C1* and *C2*. These coils do not cut down the transmission of speech to any noticeable extent for the reason that they offer a high impedance to the high frequency voice currents, and are so wound that a middle tap can be brought out of the winding and which is connected to the telegraph instruments through battery to ground.

These coils may be made up in the same manner as a repeating coil, or for cheaper installations, the two coils of an ordinary ringer will suffice, care being taken to have them of sufficient resistance as not to cut down the telephonic transmission to a very great extent. However, it is never good practice to have them wound too high, because it will then be necessary to use an extremely high voltage to operate the telegraph relay at the distant point. Coils having a closed magnetic circuit are best for this purpose, as when wound to only a moderate resistance they still offer a high impedance to voice currents as before stated, permitting a low voltage to be used for telegraphing.

It will also be noticed in Fig. 2 that condensers *K1* and *K2* are cut in on each side of the circuit between the line jacks and impedance coils, and serves the purpose of keeping the telegraph current from passing over the local subscribers' line which is liable to grounds and crosses which would seriously interfere with telegraph service.

As these condensers are intended to allow the voice and ringing currents to pass through without diminution, it is important that they be of a moderately high capacity, say, four m. f. These condensers can most easily be procured of a capacity of two m. f., and if these are used it will be necessary to use two condensers instead of the single four m. f., and the same results will be obtained.

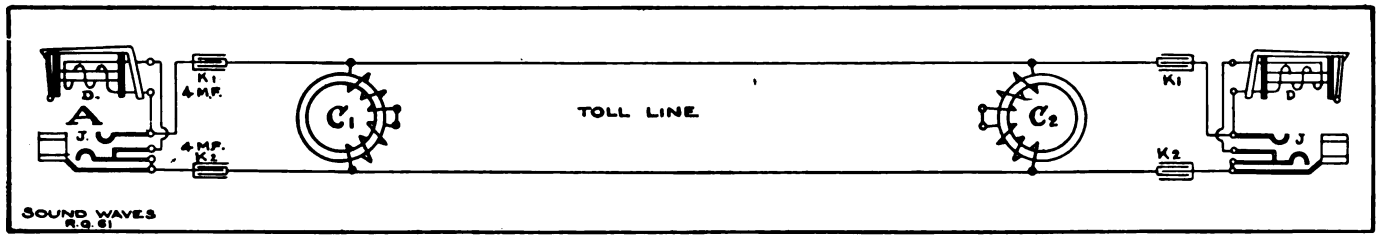

Figure 2—Arranging Toll Line for Simplex Telegraph Service.

The advantage claimed for the impedance coil system is the small cutting down of telephone transmission and the good ringing results, so long as the line and all connections connected thereto are perfectly clear from ground. This latter feature is a failure, in a great many instances, from the fact that few exchanges can use their power and hand generators for ringing without receiving ground connections in some manner; which has a tendency to operate the telegraph relay and greatly affecting that service. The unbalancing of the line by any permanent or swinging ground connection causes the

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telegraph impulses to be audible in the telephone receiver. Any connection from the line to ground will cause trouble in any system and so far as practicable should be avoided.

It is therefore obvious that this method could not be used where the toll line is likely to be connected to lines

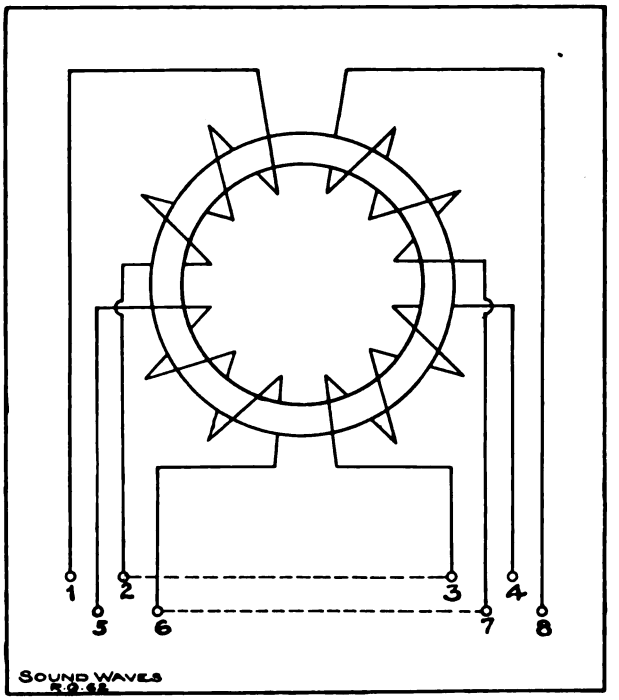

Figure 3—Simplex Repeating Coil Connections

which operate on the common or ground return system, or are unbalanced to a very great extent.

It is also necessary to have an absolutely ungrounded generator to ring down the drop at the distant end of the line; as a grounded generator would interfere with the telegraph instruments when connected to the line. Yet, when the line can be kept entirely clear from ground connections, the impedance service is much the preferable. As stated, both the telephone transmission is excellent and the ringing is very satisfactory.

These troubles are for the most part absent when repeating coils are used, as there is no direct connection between the switchboard jacks and toll lines, the same being perfectly insulated from each other, due to the fact that they are connected to separate windings on the coil.

The principal trouble with repeating coils is their inefficiency for both talking and ringing currents, due to the well-known fact that a coil built for ringing currents, which are of a comparatively low frequency, about twenty cycles per second being the average, is inefficient for the high frequency voice currents, which average 750 cycles per second, and vice versa; a coil built for both, as is necessary in this work, is necessarily a compromise between the two designs, and consequently somewhat inefficient for both purposes.

Where the repeating coils are used in place of the coils already described it is obvious that condensers *K1* and *K2* can be omitted, as the line and switchboard windings of the repeating coil are insulated, one from the other.

Repeating coils for this purpose are generally of the closed magnetic circuit type and are designed so as to allow ringing currents and voice currents to pass through with very little loss.

Many coils for this purpose have been designed and, in general, nearly all have the same characteristics, viz.: A closed magnetic circuit, with four separate windings, the whole to be enclosed in an iron tube which effectually prevents cross talk from one coil to others adjacent to it, and also protects the coil from injury, etc.

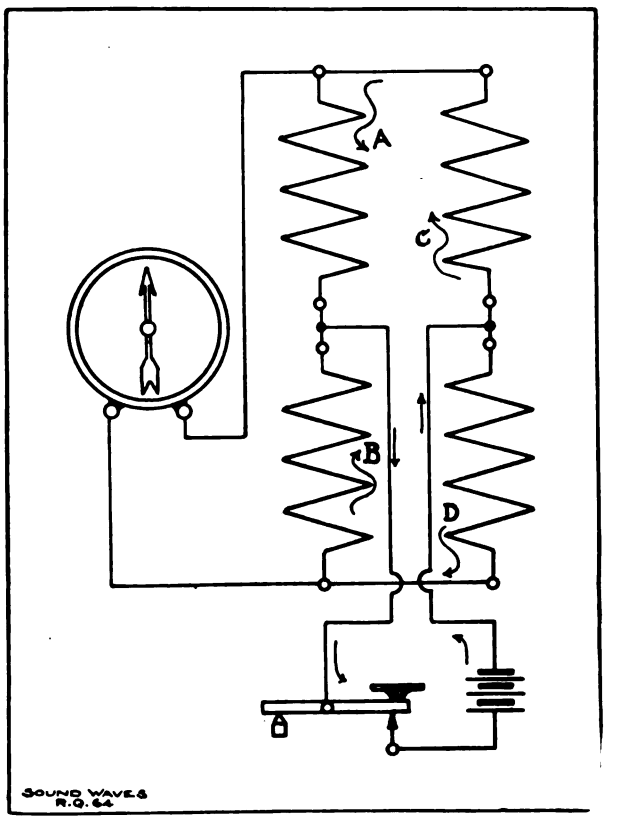

Figure 5—Wheatstone Bridge Principle.

It is well to install coils, the four windings of which are equal in resistance and number of turns, and also are so placed on the core as to have the same electrical effect. This is done commercially in several ways, by different manufacturers, each of which has its own advantages.

This method of operating simultaneous telephone and telegraph has become very popular with both large

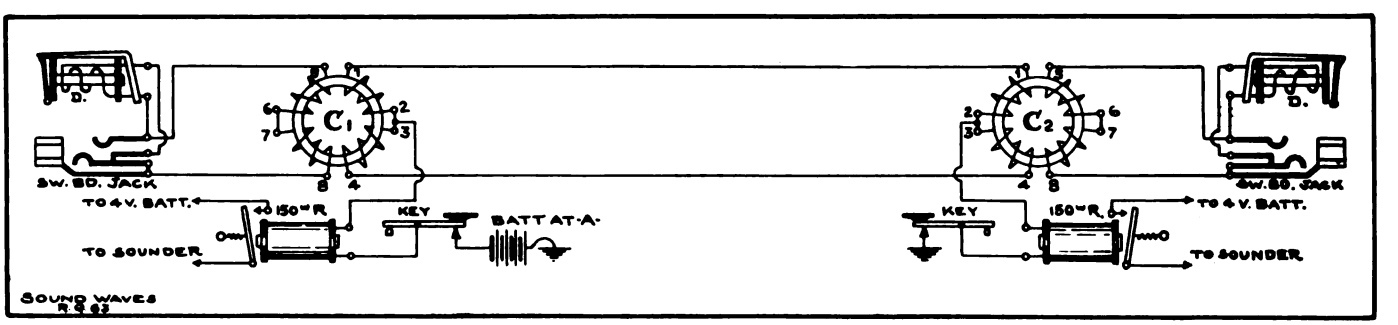

Figure 4—Telephone Line with Superposed Telegraph Circuit.

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and small toll companies for the reason that the ground ringing current does not affect the telegraph conditions, neither are the telegraphic impulses so noticeable in the telephone circuit. Figure 3 shows the connecting contacts and windings of a repeating coil adapted to the repeating coil simplex system. Coils *1*, *2* and *3*, *4* are connected as one coil at terminals *2* and *3*, as illustrated, a coil not lower than 100 ohms and not higher than 200 ohms, per winding, the lower figures being used wherever possible, as the telephone transmission is better.

In Figure 3 and, in fact, in all future figures relating to simplex circuits the repeating coil system only is shown, it being understood that with a few exceptions (hereafter noted) the electrical action is the same.

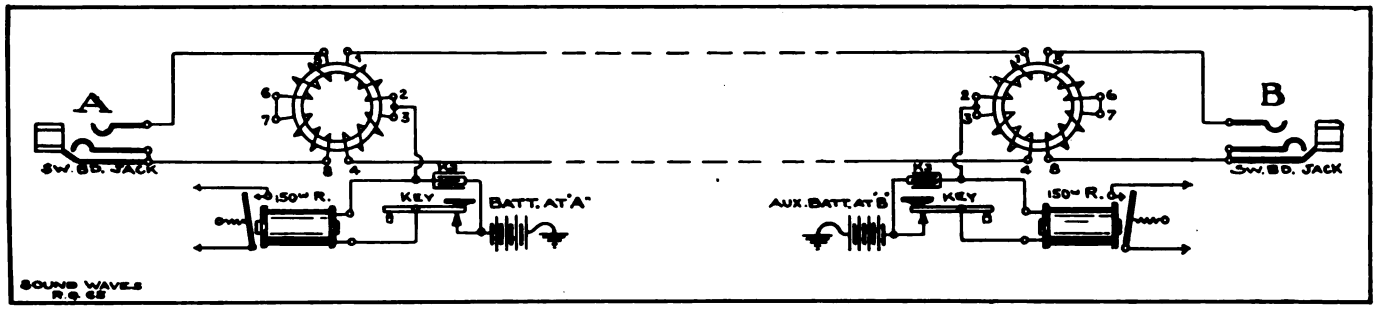

Figure 6—Combined Telegraph and Telephone Circuit.

and as toll line side of coil. Coils *5*, *6* and *7*, *8*, connected at *6* and *7* represents the switchboard side of coil. Telegraph connections at *2* on line side of coil is commonly called the leg of the coil and will be expressed, hereafter, by that term.

It is readily seen that, by this construction, the center point of the coil can easily be secured for telegraph connection. It has been found that coils having four insulated wires twisted together and wound on the same core give excellent results, as with this arrangement the four coils can be nearly balanced—the vital feature in simultaneous telephone and telegraph operating.

The resistance to which these coils should be wound depends much on the nature of the lines in which they are to be connected. If you have a line which is liable to be unbalanced to a very great extent it is best to use a coil, the windings of which are rather high in resistance, and the reverse is also true, that is, a very low wound coil can be used to advantage on a very well balanced line.

For a coil that will meet the conditions most commonly met with in practice the writers would suggest

The most common arrangement of the telegraph circuit is shown in Figure 4, complete, so far as the operation of the telegraph instruments are concerned, and it will be seen that when the telegraph operator at *A* depresses his key, he sends an impulse of direct current over each wire of the pair simultaneously, the current dividing at *T* and traversing each half of the coil winding *C1* in opposite directions, equal quantities of current traveling over each line wire *L1* and *L2*, and thence to return to ground at *B* in the same manner as at *A;* the path taken being shown by single headed arrows.

The telephone circuit, shown by double headed arrows, is metallic and is not affected by this telegraph current, for the same reason that in a balanced Wheatstone's bridge, the galvanometer needle is not affected when the battery key is depressed or released. See Figure 5.

The telegraph legs correspond to the battery supply, telephone receivers correspond to the galvanometer and the line wires, and the coil windings correspond to the four branches *a*, *b*, *c* and *d* of the Wheatstone's bridge. A perfectly balanced coil on a good line will permit a

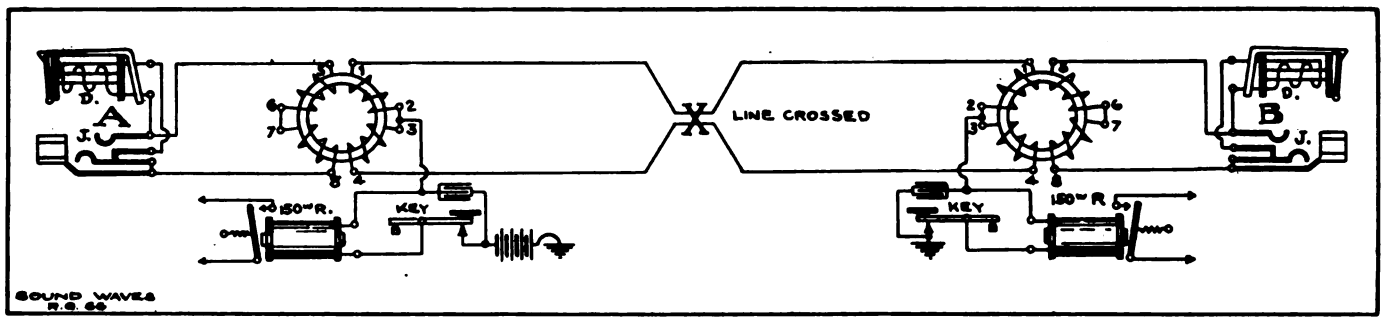

Figure 7—Showing Effect of Cross of Line Wires.

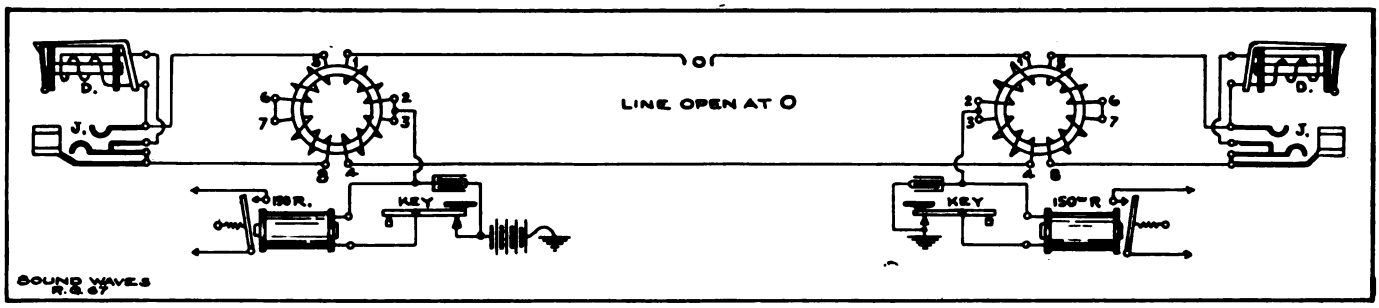

Figure 8—Showing Effect of Open Wire.

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highly efficient telephone receiver to respond to a small extent to the telegraphic impulses, if some arrangement is not provided for taking up the discharge of the circuit and smoothing the telegraph wave. Any telephone man knows that there are very few lines which are considered good that are perfectly balanced; and, therefore, the system must be able to stand a slight unbalance of line conditions without any serious results. The telegraphic impulse as it is impressed on the telephone circuit, changes rapidly in strength, rising almost instantly to a maximum, remaining there a period of time corresponding to the time the key is depressed and then falling to zero when the key is released; also the coils in the circuit discharge at this time, which causes the telegraphic impulse to terminate with a high peak.

These sudden changes would have a great deal of influence on the slightly unbalanced telephone circuit, and in order to make this influence as small as possible, capacity or inductance or both are so placed in the circuit that they have a retarding effect and the charges are accomplished at a slower rate.

A condenser of from four to ten m. f. placed in the circuit, as *K3* as in Figure 6, has a smoothing effect on the telegraph wave and causes it to have a great deal less effect on the telegraph wave, and less effect on the telephone circuit than before.

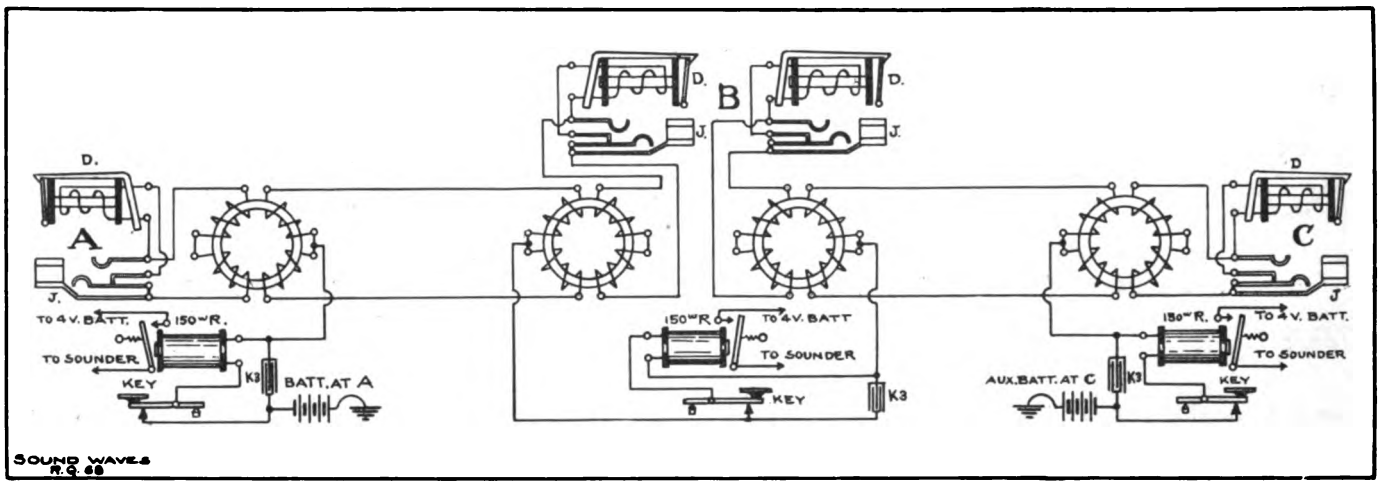

Figure 9—Intermediate Telephone and Telegraph Stations.

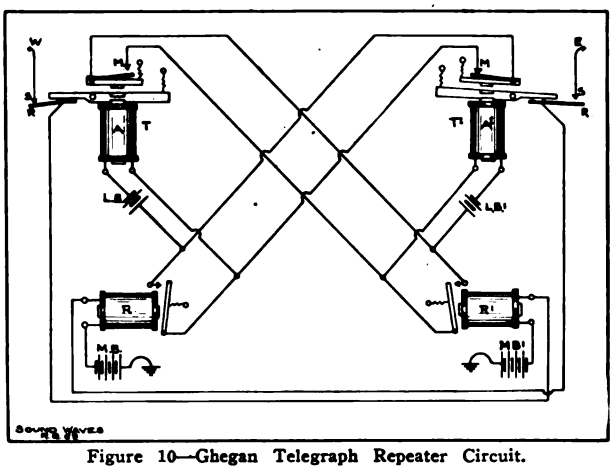

Figure 10—Ghegan Telegraph Repeater Circuit.

A condenser connected in this manner has a reaction which opposes the counter e. m. f. due to the inductance of the line and instruments which rises rapidly when the circuit is broken by the telegraph key, as before stated, and tends to make it cause less interference in the telephone sets, than it otherwise would.

If the condenser is placed merely around the telegraph key it seems to work equally well and at the same time does not slow down the operation of the local telegraph relay as is the case when placed in multiple with the entire instrument. This former arrangement is found to give results which are quite satisfactory, except that there is a tendency for sparking to ensue at the key contacts, especially where a high voltage is used.

It will be noticed, by following the telegraph circuit in the different illustrations, that the current is equally divided on either side of the line; or, in other words, the metallic line represents the same as one conductor. Thus the line may be crossed or one side open and the telegraph will still continue to operate. These conditions are clearly illustrated in Figures 7 and 8. The former shows the line crossed at *X*, while the latter shows one side of the line open at *O*. These conditions in no way affect the telegraph operation. It is to be clearly seen, however, that under either of the above conditions the telephone circuit is out of commission.

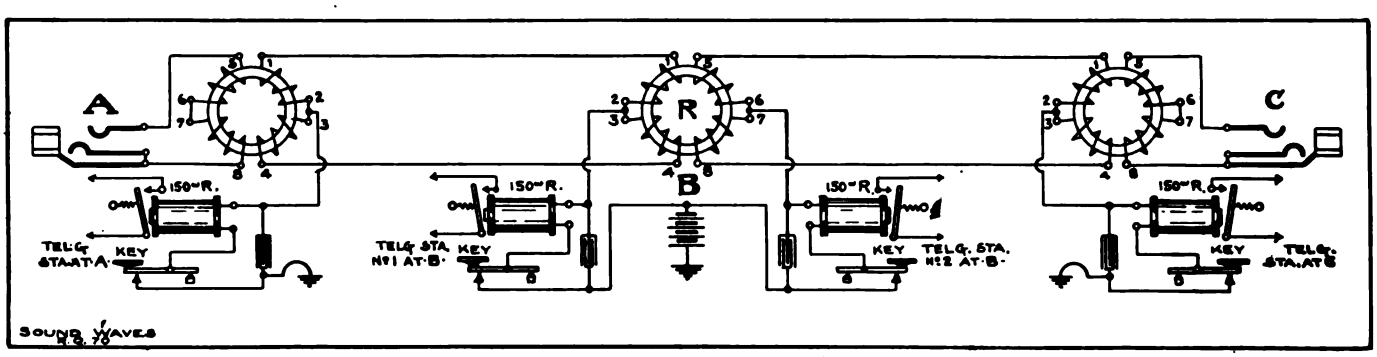

Figure 11—Through Telephone Service and Intermediate Telegraph Stations.

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Figure 9 shows theoretically how a telegraph circuit is connected through an intermediate station, *B* representing the intermediate connection.

The toll line from *A* to *B* and the one from *B* to *C* are separate lines and used as such for toll service, while they represent but one continuous line for telegraph purpose.

Figure 9 shows a telegraph station to be connected at the intermediate station *B*, which is supplied by battery from station *A* to *C*. In this illustration also is shown another battery connected from ground to the telegraph line through the Morse instruments, at *C*, this battery acting as a booster to the battery at *A*, and compensates for loss of current along the line due to leakage which amounts to quite a loss of efficiency, especially if the line is a very long one.

Often at an intermediate station, such as *B*, a special repeater is placed in the circuit which acts as a two-way relay; that is, when actuated by weak impulses of battery from either direction *A* or *C*, that it sends the same kind of impulses from an auxiliary battery in the opposite direction; this action being clearly shown in the circuits of this so-called Ghegan repeater in Figure 10, which is connected in place of the ordinary telegraph relay at *B*, as in Figure 9.

Often it is desired to terminate two telegraph circuits at the intermediate station *B* and leave the telephone line connected through. This can best be done in a manner similar to that shown in Figure 9, except that each telegraph leg of the coil belongs to a different telegraph circuit and as instead of two telephone circuits we have only one, it will only be necessary to use one repeating coil designated by *R* in Figure 11. Test panels and circuits to be discussed in the next article.

The Law and the Telephone

By George H. Murdoch, Jr.

INJURY TO SUBSCRIBER.—Edward N. Delahunt and Margaret L. Delahunt, minors, sued the United Telephone and Telegraph Company for damages on account of the death of their father, resulting from an electric current conveyed to him on his own premises over the telephone company's wires. There was a verdict for plaintiffs for $10,175.89, and the company appealed to the supreme court of Pennsylvania. The judgment below has been affirmed by the supreme court in an opinion substantially as follows:

There was a severe storm and the connection of the deceased's telephone with the exchange was broken. This disconnection continued for some weeks, and, according to the theory of the appellant, which seems to be accepted as correct, the telephone was not connected with the exchange at the time the decedent was shocked to death in taking hold of the transmitter. The allegation of the appellees, as set forth in their statement, is that the appellant, "by his careless and negligent management of its wire system, permitted one of its wires, which was not properly insulated, to come in contact with the wires of another company, heavily charged with electricity, whereby the said electric current was conveyed to the said telephone of said Thomas F. Delahunt when he was making proper and lawful use thereof, whereby by reason of the premises and the negligence of the said defendant company he received a heavy shock of electricity and was thereby then and there killed." During the disconnection of decedent's telephone with the exchange he received a letter from the manager of the company, which was properly admitted in evidence by the court, and of which the following is a copy: "United Telephone and Telegraph Company, Chester, March 18, 1902. Mr. Thomas F. Delahunt, Twenty-first and Edgmont avenue, Chester, Pennsylvania—Dear Sir: I regret to hear you have been among the unfortunate subscribers living along Edgmont avenue, and assure you we are making every possible effort to get you back into service, and hope to do so by the last of this week or the first of next. I will gladly make your telephone one of special importance and get you connected at the earliest possible moment. We are going to renew your service up Walnut street, thus explaining the seeming neglect of that part of the city. Yours very truly, W. P. Hull, manager." On the evening of April 9, 1902, a sound resembling the noise made by a cricket came from the direction of the telephone, and the deceased said: "I believe that is the telephone. I wonder if it is in use." He then got up, walked over to it, and took hold of the transmitter with both hands, drawing it down. As he did so there was a flash of flame all around the telephone, and he was almost instantly killed by an electric shock. After the appellees had shown this they were about to prove the specific negligence charged against the appellant, when the learned trial judge, evidently of the opinion that the case came within the rule *res ipsa loquitur*, told them that it was not necessary to do so, and that the testimony which they proposed to offer might be admissible in rebuttal, if the defendant should show it had exercised proper care. It offered no testimony, and on this appeal from the judgment on the verdict against it the important and main question is the correctness of the ruling of the trial judge that the plaintiffs were not required, in the first instance, to prove more than that their father was killed by an electric shock in using the instrument which, with its connections, the appellant had furnished to him as one of its subscribers.

This ruling was made on the authority of Alexander v. Nanticoke Light Co., 209 Pa. 571, 58 Atl. 1068, 67 L. R. A. 475. Electricity is the agent by which telephones become the means of communication from one point to another, and it may be conceded, as the appellant contends, that the current needed for their use is not a dangerous one. In this case it may be still further conceded that the current with which the deceased came in contact did not come from the exchange of the appellant, but at the same time it cannot be questioned that it came over one of its wires leading to the telephone of one of its patrons. Though this wire was intended to conduct only a harmless current, the appellant was bound to know that it could become the conductor of a deadly one, and that such a current would pass over it if it was not properly insulated and should come in contact with a wire heavily and dangerously charged. It was, therefore, as much the duty of the company to see that no such current should thus pass over its wires as it was to send only a harmless one from its own exchange. Its duty to its patrons was to exercise at all times the highest degree of care and vigilance to protect them from a dangerous electric current over its wires from any source. This is the implied undertaking of every telephone company, and in towns and cities threaded with dangerous electric wires the duty of the company is, by constant supervision of its wires, to

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prevent their becoming conductors of a dangerous current from others. When they do become conductor of it there is reasonable evidence that there has been a neglect of duty, and the burden is cast upon the telephone company of showing that it had not been negligent. As it is not an insurer of its patrons against the danger of electric currents on its wires, the law will not hold it responsible for what it cannot help and for what may happen in spite of its exercise of the care and vigilance required of it; but when, as here, there is an accident, which in itself affords reasonable evidence of negligence, it must show why it should be relieved from liability. The rule upon this subject, as laid down in Scott v. London, etc., Docks Company, 3 Hurlst., etc., 506, is: "Where the thing is shown to be under the management of the defendant or his servants, and the accident is such as in the ordinary course of things does not happen if those who have the management use proper care, it affords reasonable evidence, in the absence of explanations by the defendants, that the accident arose from want of care."

By a number of assignments of error we are asked to say that the court erred in not directing a verdict for the defendant on the ground of the contributory negligence of the deceased. Counsel for appellant very properly state that the current of electricity necessary to operate a telephone will injure no one. The deceased knew this, and, of course, felt that his telephone was as harmless as it was useful, and there was no reason why he should have hesitated to take hold of the transmitter. He had been notified by the manager of the company that the connection of his telephone with the exchange would be established "at the earliest possible moment," and when he heard the noise coming from it he evidently thought it had been connected, for he said: "I believe that is the telephone." In then getting up, walking over to it and taking hold of the transmitter, he did just about what anybody else would have done under the circumstances; but because he happened to stand on a wet carpet and the transmitter was made of metal, it seems to be seriously contended that he was guilty of negligence, and that the court ought to have so instructed the jury. If the current of electricity needed for telephones were dangerous, a consideration might possibly be given to this proposition, but it cannot be so dignified under the facts in the present case. In submitting the question of the contributory negligence of the deceased to the jury, the appellant was given a chance to escape, of which the appellees might fairly have complained, if the finding had been against them. The assignments of the appellant relating to this feature of the case are all overruled.

One of the appellees, a daughter of the deceased, is a deaf mute, who was about seven years of age at the time of her father's death. In allowing her condition to be made known to the jury the learned trial judge stated that, in view of it, the father might have been liable to contribute more to her support "than he ordinarily would." This remark was true, as a matter of fact, and, as a legal proposition, did no harm to the appellant, for the jury were distinctly instructed, in language that they could not have misunderstood, that if the appellees were entitled to recover, the amount of the verdict would have to be limited to compensation to them for loss of what they could have expected from their father for their support and education while in their minority, during which period he would have been entitled to their earnings.—64 A., 515.

UNUSUAL PERIL—NOTICE TO EMPLOYE.—John Snyer was employed by the New York and New Jersey Telephone Company to string some of its wires above and across certain electric light wires of another company. He was injured by reason of coming in contact with these electric light wires or through current conveyed to him from them by means of wires which they crossed, and he sued the company for damages on account of these injuries. There was a judgment against him in the lower court, but this has been reversed by the New Jersey court of errors and appeals and new trial ordered. The court said:

"The conceded relations between Snyer and the defendant company was that of employer and employe. The company owed to him a duty to take reasonable care that the places in which it employed him to work were safe for the work which he was to do, and if unusual and unexpected perils respecting the places of work, or the work itself, became known to the company, a duty was imposed on it to make such perils known to him. On this subject there was evidence to go to the jury. The plaintiff was employed by the company at the time his injury was received in stringing telephone wires from pole to pole, over wires of the Paterson and Passaic Gas and Electric Light Company, which ran at right angles to the line of wires which the plaintiff was stringing. There was evidence from which the jury could infer that the plaintiff and other workmen in the employ of the company had known that the wires of the Gas and Electric Company were customarily charged with a current only at night, and that the current was used only for lighting the streets. There was evidence from which it could be found that, some time before, the Gas and Electric Light Company had formally notified the defendant that it had established a day current along its lines in the locality in which plaintiff's injury was received, of considerable intensity, and the defendant company was asked to instruct its workmen to take proper precautions for their safety. The plaintiff testified that the fact that the Gas and Electric Light Company was to send day currents through its wires was not made known to him by the defendant company, nor was he warned of the danger he might incur by coming in contact with those wires, directly or indirectly, after currents of the intensity stated were turned on, and carried through them in the daytime. In this respect there were questions for the jury. Upon the evidence a verdict might have been rendered finding the defendant company derelict in its duty to the plaintiff, its employe.

"The learned justice, however, put his determination to withhold the case from the jury upon the sole ground that the evidence disclosed, as a matter of law, that the risk of injury which plaintiff took when accepting employment in stringing wires across the wires of an electric light company, was one obvious to him, and which, by acceptance of such employment, he assumed, and held that for injuries thus received plaintiff could not hold his employer liable. In directing a nonsuit on this ground I think there was error. The well-settled rule is that an instruction for a verdict, or a direction of a nonsuit, cannot be supported unless it appears that, upon facts which the jury might find to have been proved by the evidence, with such inferences as could be reasonably drawn therefrom, no verdict, and no number of verdicts, could be supported.

"Plaintiff testified that he was an experienced lineman, and knew that an electric light wire became highly dangerous when a current of the intensity usually used for electric light or power is passing through it. Such wires, however, give no sign by their appearance, of the passing of a current, or of its intensity. If the only evidence produced showed that plaintiff had knowledge that he was stringing wires over the wires of an electric light company, which might be carrying a dangerous current, whether there was thus disclosed such an obvious risk

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assumed by plaintiff as would justify a nonsuit, or whether the question of assumption of risk on such evidence should be submitted to a jury, need not be determined. For there was other proof which, in my judgment, presented a question on the subject of assumption of risk which should have been submitted to the jury. It could have been found therefrom that plaintiff, from previous observation, had ascertained that the electric light wires in that locality had not been used to carry any electric current in the daytime, and that plaintiff, with other linemen of the defendant company, went to the place where the wires were to be strung crossing above the electric light wires, on Saturday, and were engaged during the day in that work. In the course of that day, and for the purpose of facilitating their work, they took down the electric light wires, and replaced them when they quit work on Saturday afternoon. The plaintiff declares that when he handled the electric light wires, in taking them down or putting them up, he felt what he called a 'little tickle,' but it was evident that there was no dangerous current then passing through the electric light wires. On Monday morning the gang of men, of whom plaintiff was one, returned to complete their work, and in doing so had to rearrange some of the telephone wires which had been left on Saturday pieced out by wires of a different size. They engaged in replacing those pieces by wires of the proper size, and proceeded so far as to complete their work in respect to two or three of the telephone wires. Plaintiff was then at the top of a pole, engaged in putting what is called a sleeve in the last wire that was to be strung, when, without warning, he received a shock which caused him to fall, and which terribly burned and maimed his hand. From this evidence the jury might find that, although an electric light wire, if carrying its intense current, was a danger which must have been known to the plaintiff, yet if they believed that on Saturday plaintiff had assisted in taking down the electric light wires, and found no dangerous current in them, and on Monday he and his fellow workmen had strung some of their wires without experiencing any shock from the electric light wires, although the telephone wires, it may well be inferred, sagged down upon and came in contact with them, I think there was a question for the jury, whether or not the danger of injury from a current through the electric light wires was, under those circumstances an obvious one, the risk of injury from which he must be deemed to have assumed."—64 A., 122.

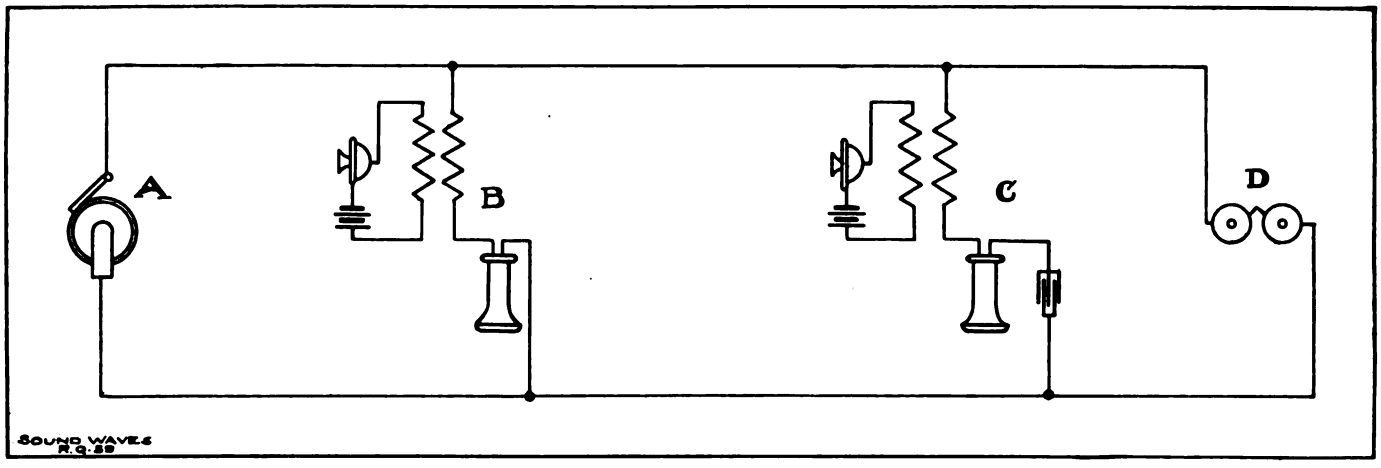
The Farm Line Telephone Problem

By H. P. Clausen

IT is a question whether the above title should not be omitted and the expression "The evil effects of the telephone eavesdropper" used in its stead.

Every manager of a telephone exchange who is required to give service and interconnecting facilities to farm lines thoroughly appreciates the expression "evil effects." Farm lines, as a rule, are so constructed that each circuit gives service to as many telephones as can conveniently be connected to the line wire. Stories are told in which as many as sixty telephones were found connected to one lone wire, but perhaps an average of fifteen or twenty telephones should be set aside as representing the usual conditions. Now with a circuit, metallic, or earth return, equipped with twenty telephones, it is obvious that when the central office endeavors to signal out over such a line, say, for the purpose of ringing a bell of the most distant subscriber's station, it is a sore trial of the operator's patience when it is found that one or more subscribers along the line removed their receivers from the hookswitch the moment that the first hint of a signal passed over the line, probably for the simple reason that these eavesdropping subscribers thought something very important might pass over the line without their hearing it. It is difficult to imagine why the subscriber should not wait until the complete signal has been passed over the line. But the fact remains that he does not, so then the problem is to provide ways and means for preventing the service of the line being completely demoralized in spite of this lack of cooperation on the subscriber's part.

In order to study this question, let us first refer



Station A Trying to Signal Station D.

to the diagram. This shows a signaling station; say, the switchboard at *A*, while *B* and *C* represent subscribers' stations on the line, and *D* the station which the central office operator is endeavoring to signal. Immediately on hearing the first ring of the bells, subscribers *B* and *C* remove their receivers from the hook switch; and, aside from hearing a disagreeable noise in their receivers, are willing to put up with this condition until the central

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office finally succeeds in getting enough current over the line to operate the *D* bell.

In this diagram it will be observed that at station *C* the current projected over the line wires from *A* must necessarily pass through the induction coil and receiver back to the other side of the line. This then represents just so much lost current. If there is a sufficient number of receivers removed from the hook switch and connected across the line it will be impossible to secure enough current at the *D* station for operating the bell. This is due to several causes: First, the bell *D* usually is wound to 1,000 ohms resistance, whereas the receiver and induction coil connected in series generally measure less than 250 ohms, and, in addition to this, the impedance of the ringer is much higher than the combined impedance of the induction coil and receiver. So then, even with one receiver removed from the hook switch, more current passes through the subscriber's station equipment than can possibly be obtained at the station which is being signaled.

There are several ways open to us for preventing this unequal division of current. First, we may wind the secondary of the induction coil to a sufficiently high resistance for making the impedance of the telephone receiver combination equal to the impedance of the telephone ringer. This, however, is impracticable, for whatever impedance we insert in series with the telephone receiver necessarily results in a corresponding reduction in the receiving efficiency of the receiver.

A second plan, and one which at present is being universally applied, consists in connecting a condenser in circuit with the telephone receiver and secondary of the induction coil. When this condenser is about one-half m. f. in capacity, it passes but a very small portion of the ringing current projected from the *A* station, while it offers but very little resistance to the more rapidly alternating current of the telephone. This provides a means for permitting the *D* station being signaled from the *A* station, even when a proportionately large number of receivers have been removed from the hook switch. The *C* station shows a condenser cut in the circuit.

However, there is still another question to be considered in connection with the farmers' line circuits. Even after the *A* station has succeeded in calling the subscriber to the telephone at station *D*, and the subscriber *D* is proceeding with the conversation, and assuming the probability of six or eight subscribers having their receivers removed from the hook switch and patiently listening, these stations absorb a certain amount of the available telephone current; *i. e.*, the very fact of the impedance of the telephone receiver and induction coil being low brings with it the condition that telephone current generated while the *D* subscriber is speaking into his transmitter, finds low resistance by-paths before it reaches the *D* subscriber's correspondent. This then calls for increased power in the telephone currents, and it may be obtained by a suitable design of the induction coils.

In other words, on a many party telephone line subjected to the eavesdropping practice the telephone current should be very powerful, and with a given transmitter and given battery equipment the only practical way to increase the power will be to reduce the impedance of the telephone circuit by reducing the number of turns of wire in the secondary of the induction coil. This brings about two results: The resistance of the induction coil is reduced and the receiving is therefore more efficient. At the same time, a fewer number of turns, carrying with it a great reduction in the ohmic resistance, results in the production of a larger quantity of current, and it is quantity which we want when it comes to supplying current to six or eight telephones on a line and still have enough surplus current to permit the talking subscribers to carry on satisfactory conversation with each other.

So then we have determined that in order to obtain the best service from a many party farmers' telephone line it is necessary to increase the current output by increasing the power of the induction coil and reducing the resistance of the secondary winding of the induction coil, as explained. Further, that in order to prevent the telephone combination from short-circuiting the signaling current it is necessary to insert a low capacity condenser in series with the telephone circuit.

Now, as respects a general adoption of this plan, it will be found that from the beginning complaint will be made that under certain conditions speaking is not as good from one of the telephones equipped with the new induction coil toward one equipped with the old induction coil as it was while speaking from a telephone equipped with an old coil to another similarly equipped. This, of course, is due to the fact that there is considerable impedance in the high winding of the secondary of the induction coil in the old telephone, and that while the current produced by the low resistance secondary induction coil is of greater quantity, it is not of as high a voltage as the current produced by the high resistance secondary induction coil. And still another effect is observed while speaking from a station equipped with the old coil toward a station equipped with a new coil. The transmission is very greatly improved over that found in speaking between two telephones equipped with the old style coil.

It is the average results, however, which count largely in favor of the low secondary coil, for with the new coil you can talk past more bridges across the line than can possibly be done with a higher resistance and correspondingly higher voltage equipment.

In order that a general idea may be obtained as to the difference between what the writer has termed old and new coils, it may be mentioned that such induction coils as are wound with a high resistance secondary measure anywhere between 175 and 250 ohms. That then is the resistance through which the telephone current must pass before it reaches the telephone receiver, while in the new coil the resistance varies from twenty to forty ohms, from which it will be observed that a very marked increase of the receiving efficiency should be the result. And not alone that, it is also found that induction coils with a high resistance secondary distort the speech more than the coils provided with a low resistance secondary.

In conclusion, it is urged that careful consideration should be given to the fact that when telephones with low secondaries are installed on a line it will produce certain results. In the first place, when the telephone with a low resistance secondary is connected across the line and the receiver is removed from the hook switch it is difficult to signal past that station unless the condenser is inserted in series with the induction coil and receiver.

Further, it will be found that the speech received at the station equipped with the low resistance secondary is superior to that received at any station equipped with the high resistance secondary coil, and, also, that a low resistance coil station will not transmit so well to a high resistance secondary telephone for reasons already explained, but finally that while speaking from a low resistance secondary station over an exceedingly long line with many telephones connected to it the average result will be in favor of the low coil.

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The Preservation of Poles and Timber

By J. J. Kessler

AFTER timber has been cut and put into use, its life is determined by its environment.

Every one is familiar with the fact that in some instances timber has been in use for many generations without showing any sign of decay, and that, in other cases, timber of equally good origin has lasted but a short time.

Decay is most frequently caused by the lower forms of plant and animal life.

The chemical constituents of the wood are attacked by these organisms, fungi and bacteria, changing their chemical nature. Part of the resulting compounds are absorbed as food, and there is left behind a substance of no mechanical strength and perfectly useless. The parasites which destroy the wood in this way thrive best where the timber is exposed to both moisture and air. This is readily noticed in the case of fence posts, telephone poles, and in piles, where decay starts at the point where the poles leave the ground or the piles the water. Timber that has not been seasoned succumbs most readily to decay, favoring as it does the existence of its destructive enemies on account of the moisture present.

Timber that is immersed wholly in pure water will not decay owing to the lack of oxygen necessary for the life and propagation of these bacteria and fungi.

Wood preservatives are substances which prevent decay either by the exclusion of moisture, or by preventing the growth of micro-organisms.

In order to absolutely exclude moisture, wood must be impregnated, or rather filled, with water insoluble substances. All liquids and gases must first be removed and the space occupied by them filled with the preservative compound. It is impossible to accomplish this by simply dipping the pieces to be tested. A decrease of pressure is required, together with higher temperatures, to expel all moisture and much of the air. Then, when the wood is immersed in the impregnating compound, pressure must be applied in order to force it through the pores and fill them up.

The preservative compound must be fluid enough to pass through these pores, but not so fluid that it will run out again under service conditions. Such treatment, of course, requires considerable apparatus—a pressure and vacuum pump, closed treating tanks and steam coils.

When *completely* filled up with a correct waterproof substance, correct with respect to its physical properties, wood may be said to be perfectly preserved. It will never rot as long as it remains filled up. It may wear out mechanically, but not chemically.

By use of the second class of wood preserving compounds, each cell must be sterilized. It need not be filled up with a solid in order to accomplish this. A small amount of substance will do, and water need not be excluded. The sterilizer must be in a liquid condition as it enters the wood. If inorganic salts, such as copper sulphate or zinc chloride, are used, they are first dissolved in water. Organic antiseptic substances, such as phenol (carbolic acid), naphthalene, etc., may be in the tar oils in which they are present.

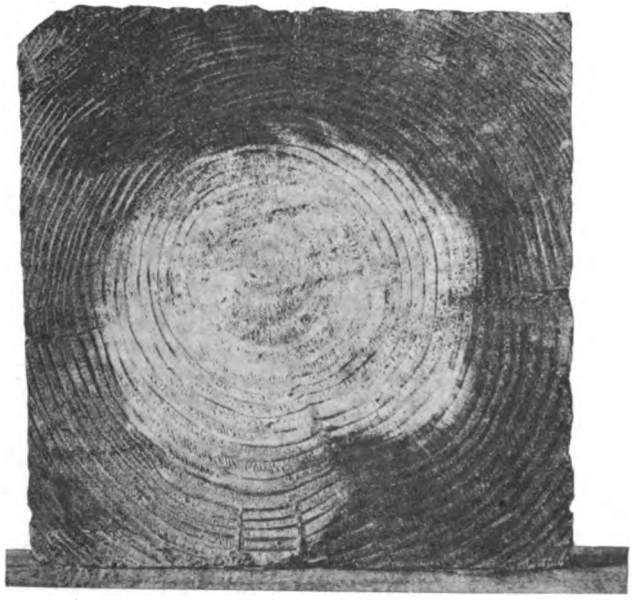
One would imagine that any substance dissolved in water could not be as effective as an oil solution because, first, of the tendency of the water soluble compound to be washed or dissolved out again; and, second, the presence of the oil would help to fill up the pores, exclude moisture and tend to keep the preservative dissolved in it in place. The advantage of this second method of preservation has been fairly proven in practice.

The German postal and telegraph department has recently published statistics collected during a period of fifty-two years on the life of poles impregnated with different preservative substances. The number of poles under observation were nearly 3,000,000 and the following results were obtained:

POLES IMPREGNATED WITH—	LIFE, YEARS.
Copper sulphate	11.7
Mercuric chloride (corrosive sublimate)	13.7
Heavy tar oil	20.6
Unimpregnated	7.7

In order to get the best results, of course, the treatment must be thorough. What constitutes thorough treatment can only be found after considerable experience.

As an example of the improvement effected in copper sulphate treatment, in 1883 the average life of the



Fence post of Baltic pine, 40 years old, treated with wood preservative.

German poles cited above was 9.4 years, while in 1903 the method of treatment had been improved so that an average life of 13.3 years was obtained.

Although the method of partially filling up wood with antiseptic substances is not as effective as completely filling it up with absolutely waterproof substances, for practical and economic reasons the antiseptic treatment is the only one used on a commercial scale.

The whole problem hinges on the cost of the wood.

A French engineer considers it very profitable to spend from fifty to eighty cents on a tie costing from $1 to $1.40 when he can increase its life from seven to thirty years. He spends more money than his German confrere who can figure in wood more cheaply.

Zinc chloride has given good results on some railway lines in Germany, even if it does leach out in time. Copper sulphate has done well, too.

It is worthy of comment that poles and ties in Europe are almost universally treated with some preserv-

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ing compound. The increasing need of it is being felt here at home. Wood is increasing in value. The railroads in this country renew 110,000,000 ties every year. The Bell Telephone Company has 8,000,000 poles in use, varying from twenty to ninety feet in length, of which 800,000 poles were added during the past year. In 1887 the number of renewals was estimated as 70,000,000. There are no available statistics showing the number of poles in use by Independent telephone operators.

Our forest preserves are disappearing rapidly. They are no longer so vast that they can be called inexhaustible. Their resources is almost a matter of exact calculation. Forestry engineers have already been called into existence. It is their problem to establish methods of cutting timber along lines which will insure a regular supply. They will be expected also to establish new centers of supply by caring for and planting denuded or treeless areas. They will be expected also to study the problem of increasing the length of service of the material at hand.

It will pay telephone engineers to begin to add something to the first cost of their poles and ties in order to increase the period of their usefulness. It will not pay at the start to do this too thoroughly, but as wood increases in value the cost of the preservative treatment may be economically increased as well.

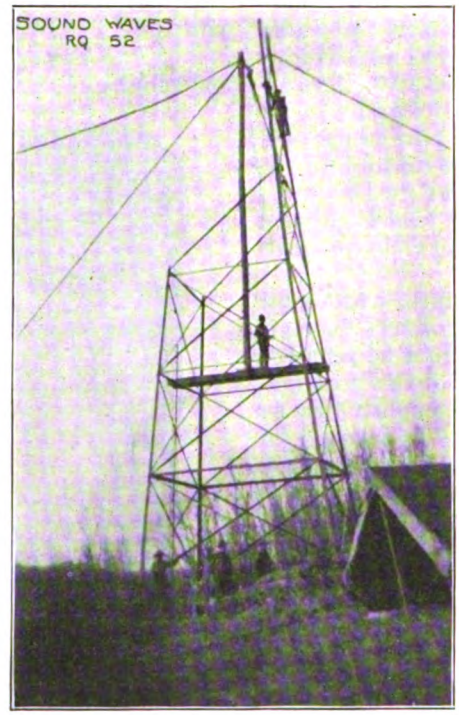
Perfect impregnation would be an unnecessary expense at the present time. Partial impregnation, either by dipping or brushing, will add the proper increment to first cost and to life.

Telephone Lines and River Crossings

By Oscar King

ONE of the difficult problems which confront the long distance telephone constructor is the crossing of wide and swift streams with their wires. The Western Union Telegraph Company, in most instances, has exclusive wire conveyance privileges over railroad bridges, which precludes the use of the bridge by telephone wires—formidable rivals of the telegraph in the transmission of messages.

In planning a river crossing the telephone engineer has a choice of two methods,—sub-aqueous or aerial. There are many and various reasons which mitigate against the former method. The Quincy Home Telephone Company, having constructed a modern underground multiple duct and system embodying the most advanced ideas in the telephone field, were desirous of giving its patrons a superior long distance service to all parts of the country and nearby and remote towns.



Tower in Course of Construction.

With that object in view, the Quincy Home Telephone Company built a thirty-foot lead, with forty poles per mile, from Quincy, Ill., to Hannibal, Mo., where it connected with the Bluff City Telephone Company. This required a crossing of the Mississippi river. The Missouri side offered a favorable location for take-off-pole in the way of a bluff elevation 175 feet high. The Illinois side was low bottom. After selecting a site which would give suitable anchorage, a survey was made to locate tower and take-off poles. A triangulation of the river gave a horizontal distance of 2,591 feet from tower site to take-off pole on the Missouri side of the river. The tower was of steel and designed especially for the Quincy Home Telephone Company. It was eighty-five feet high, with a base spread of legs seventeen feet and eleven inches, and was composed of three sections, the two lower ones being thirty feet each and the top one twenty-five feet. The head had upper and lower supports for timber 12x12. The dimensions of angle steel are shown in illustration. Each corner rested on a concrete footing, as shown in diagram. However, it was a mistake to make them thus, and I would recommend that they be built in the form of a frustrum of a pyramid, as shown by dotted lines. The same amount of material disposed in this manner gives lines of greater strength—a larger base area and a stronger section where washer of anchor bolt is embedded. In raising the parts of tower into position, a thirty-foot gin pole was used.

Placing the bed frame, which was connected at each corner by gusset plates, half of the first section was assembled and raised into place. This was held by guy ropes, while the other half was also raised. These two halves were then connected by all diagonal and horizontal ties. Timbers were then placed across horizontal ties, *5*, on which to set gin pole. In the angle where diagonal braces, *6*, crossed, a timber was placed, to which blocks were attached. The other end of blocks was attached to base of gin pole and gin was then raised vertically to timbers placed to support it. Section 2 of tower was then raised by halves, as shown, after which gin pole was raised to horizontal tie, *11*, and the top section was raised into place. The 12x12 timber in head was fifteen feet six inches long, and was built up from 2x12 sixteen-foot lumber, spiked lightly together, after which it was framed and bored for bolts of five cross-arms made of angle steel 4x4 5-16 and ten feet long.

The timber in head was raised vertically through center of tower and pushed up through top support until it was raised high enough to slip lower support beneath it. It was then lowered into place and bolted. The horizontal and diagonal ties were grouped upon a 5/8-inch bolt direct to leg of corner post. The glass used was grooved. The groove carried a hardwood saddle in which wires rested. A heavy, porcelain roller is preferable to glass. The take-off pole behind tower was 450 feet back and was a thirty-foot chestnut pole with eight-inch top.

The anchorage consisted of a chestnut slug nine

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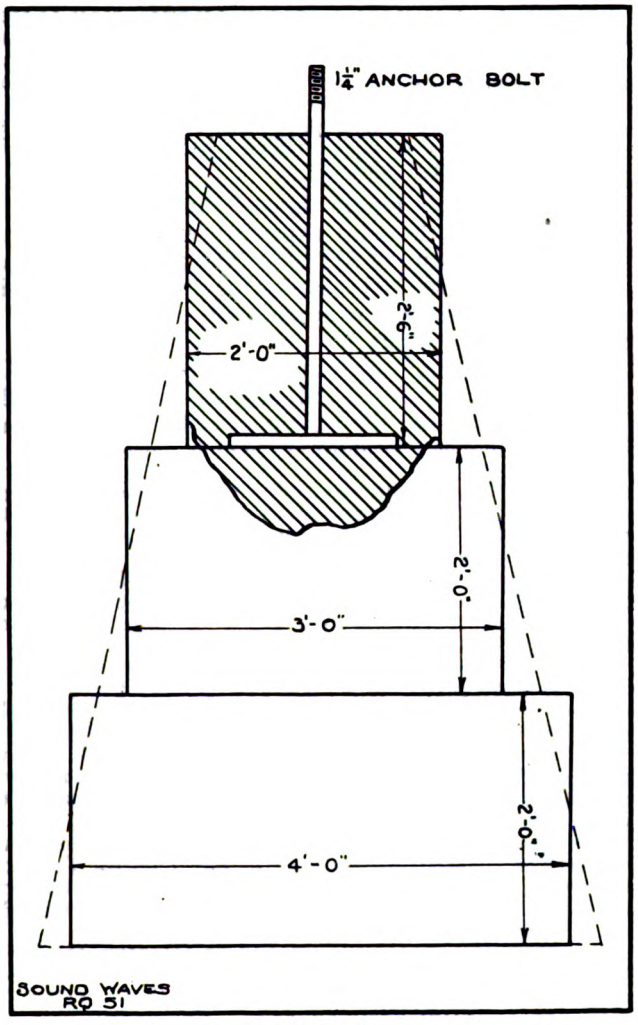
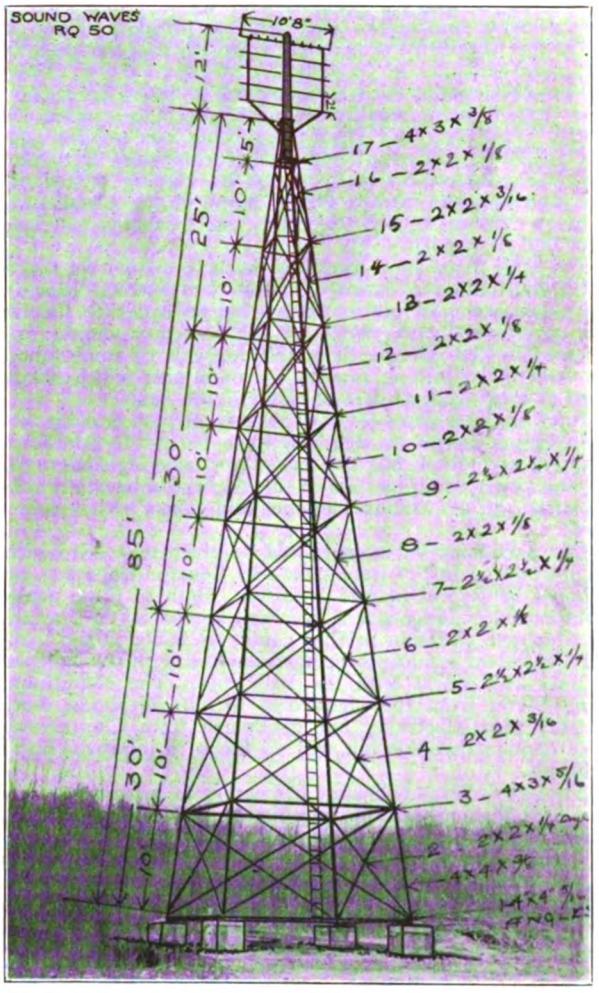
feet long, sunk eight feet in the ground, over which split halves of three-foot six-inch pieces were laid transversely and well tamped. A 10x1 galvanized anchor was used. Two ½-inch guys were put on take-off poles and secured with Crosby clips. The take-off pole which supported crossing span direct was guyed with storm guys. The cross arm which held river crossing was dropped down on take-off pole and was 4x6, ten feet, guyed back at each end, having guy attached by eye bolt, ½x8.



Concrete Footings.



The Tower Completed.

Similar eye bolts spaced twelve inches apart (except at pole space, which was twenty-four inches) received three-eighths guy strand, in which solid glass circuit breakers were made up.

A broad stern skiff, two oarsmen and a play out reel was used in pulling in wires over the river. The wires were played out one at a time from the bluff side in a slightly up stream loop and the end carried up over tower and 450 feet back to take-off pole, where it was served up in the glass circuit breaker with a reinforced wire, making long wraps and using care not to cinch wire too tight. An eighteen-inch stub of crossing wire was left, to which the jumpers could be attached by test clamps. This gives a test station. The sag was then pulled out of space between tower and take-off pole and the pull was made from the bluff side with No. 2 Buffalo grips. By thus pulling span the slack in the wire which lay in the water did not have to travel through grooves in glass on tower.

The Nebraska State Convention

THE annual convention of the Nebraska Independent Telephone Association, which was held at Lincoln, January 22, 23 and 24, was attended by over one hundred representatives from all over the state. The meeting was opened by President F. H. Wood, who said in part:

The past year in the Independent telephone field in Nebraska has been one of actual achievement and of work well done. Our progress has been truly remarkable. A year ago we came together as delegates from the different companies that we represented without any compact business organization. We had been meeting once a year and discussing matters of common interest and then adjourning. While much benefit was derived from these meetings, in the interval between conventions there was no one whose business required him to attend to matters affecting our common interests. Realizing that our organization was too loosely constructed, at our last convention we adopted a resolution which established a business organization and provided funds for the employment of a general secretary to take charge of our work. The wisdom of the action then taken has been fully demonstrated by the results actually accomplished.

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It is highly important that each telephone company should know not only its own business but that it should also keep fully posted as to what its neighboring connecting companies are doing.

When many of us embarked in the telephone business we sought to get good local service at reasonable rates. We thought that when our local plants were installed the business would take care of itself. The demand for extension of service has exceeded all of our expectations, and we find our small companies growing into larger ones, with no prospect of any abatement in the future of the marvelous growth that has been taking place.

The Bell monopoly has employed a large force of men whose duty it is to persistently misrepresent our work. They circulate broadcast false stories regarding our service and our financial affairs. Many of our smaller companies have no paid managers and have no ready means of keeping posted on the many developments always taking place in the telephone field, and many of them have been tricked into becoming sub-licensees of the Bell monopoly.

The state association has done much to counteract this work by the distribution of printed matter, by personal letters, and by personal visits of our secretary, but in order to handle the situation effectually the work of our secretary should be supplemented by the issuance at stated intervals of some kind of a state bulletin containing reports of conditions, which should be mailed to every Independent operator in the field.

Another legislature is now in session, and already several bills affecting telephone interests have been introduced. Your legislative committee has not asked for any legislation of any kind, thinking that all matters of the kind could be safely referred until after the association had met and taken such action as it desired.

Our particular attention should be given to a bill which has been introduced in the state senate by Senator Epperson, and in the house by Representative Jennison. Both of these gentlemen are interested in Independent telephone companies in Clay county. The telephone situation in that county is badly mixed, some of the Independent companies being connected with the Independent toll lines and others with the Bell lines. The conditions prevailing there, from the standpoint of the telephone user, are decidedly unsatisfactory. The gentlemen from Clay county are of the opinion that this bill will do much to improve their local conditions.

The act declares telephone companies to be common carriers, and places them under the jurisdiction and control of the state railway commission, requires all telephone companies to post rate sheets, and gives the commission power to regulate rates and to prescribe the conditions on which different companies shall connect their lines, and to compel such connections upon reasonable terms. It is made the duty of the county attorney and attorney general of the state to prosecute all complaints lodged before the commission. It provides that unreasonable charges for service shall be unlawful and forbids discrimination between individuals or communities, and provides penalties for the enforcement of the law. Companies are also required to file a yearly report of all their affairs with the commissioner.

Secretary R. E. Mattison, in his report, told of how the Independent telephone companies have won over the Bell Company, which had been trying to injure their business. During the last year, he said, the Bell Company has sent agents into their territory to solicit Independent companies to sever all connections with Independent companies and use Bell lines exclusively. The agents urged contracts to this effect upon the Independents. After trying this method for several months without results the Bell Company presented several other propositions, but in nearly all instances the Independent company workers have defeated their opponents.

Mr. Mattison said in part:

A year ago there were no Independent telephones in Nebraska that could talk to more than 35,000 other Independents. Those same telephones today can talk to more than 200,000 Independent telephones. This has been made possible through toll line extensions between Lincoln and Kansas City and other places over the state, and the building of a river crossing at South Omaha, which connects the Independent companies of Nebraska and Iowa.

Independent companies have worked for five years to secure a franchise in Omaha, and a long fight has been rewarded by the citizens of that city, who granted a franchise to the Independent by popular vote last November. The association has grown during the last twelve months from 14,000 units to 24,000 units. The territory that our work is confined to has 48,000 Independent telephones, as against only 14,000 Bell; 210 exchanges to only thirty-nine of the Bell Company.

We now have a state directory of Independent telephone users. This directory contains the names of 42,000 subscribers, contains 410 pages, and is the largest telephone directory ever issued. The book is now in the hands of the printer, and will be distributed before the end of the month.

The state has been divided into five districts. Most of them have held two meetings during the year. Among the things that are needed to improve conditions in this state are standard toll line equipment, standard toll line construction, standard operating rules, a disposition on the part of each local company to solicit the territory that it occupies. I have found that a great deal of business is lost by not providing a booth in the hotels for the use of the traveling public.

The treasurer's report showed the total receipts to be $2,220.26, and the total expenditures $2,068.83, leaving a balance on hand of $151.43. The amount of unpaid assessments was $892.83. Following this a general discussion was called for of conditions over the state in the individual companies.

The committee on resolutions, consisting of Dr. Lyman, Hastings; R. V. Montague, Beatrice; F. H. Woods, Lincoln, and T. H. Pollock, Plattsmouth, submitted the following resolutions, which were adopted:

WHEREAS, Several bills have been introduced into the legislature the effect of which will tend to restrict and restrain the development of the Independent telephone movement throughout the state, and

WHEREAS, All of said bills will affect the development of all the Independent telephone companies now existing and prevent other telephone companies from being organized and Independent plans being constructed, and

WHEREAS, Investors will hesitate to invest in telephone securities of Independent companies and unsettle the values of such securities if any adverse legislation is enacted at this session of the legislature, and

WHEREAS, Any legislation at this session tending to force the Independent companies throughout the state to connect with the Nebraska Bell Company will stifle the growth of all Independent companies throughout the state, and

WHEREAS, Any legislation forcing the Independent companies to operate or connect with the lines of the Nebraska Telephone Company will prevent the construction of Independent telephone lines throughout the state and will restore to the Nebraska Bell Company its former monopoly, and

WHEREAS, It is unfair, unjust and unreasonable to the Independent companies now doing business in this state to force them to connect their respective lines with those of the Nebraska Bell Telephone Company, and

WHEREAS, Legislation of this character will depreciate the value of the property of the Independent companies throughout the state, and will render their present telephone service inefficient and ineffective, and

WHEREAS, An Independent company has just begun the construction of an Independent telephone plant in the city of Omaha, and any legislation of this kind, forcing companies of the state to connect with the lines of the Nebraska Bell Telephone Company, would not only destroy and confiscate the property of the weaker telephone companies of the state, but would prevent the construction of the Independent telephone plant at Omaha, and

WHEREAS, Any such legislation at this session will be very detrimental to the interests of the people of the state of Nebraska, in that it will destroy all competition; now, therefore, be it

Resolved, That we oppose all bills now introduced in the legislature and that we earnestly request all citizens of the state of Nebraska using Independent telephones to request their respective senators and representatives to vote against any and all said bills as they now stand, and that

We favor the introduction of a bill preventing unjust discrimination on the part of all telephone companies throughout the state, and we further favor the enactment of such law as will prevent the giving or accepting of any free coupons, passes or telephone service of any character whatsoever.

A committee was appointed by the president to prepare proper legislation and confer with the committee of legislators having the telephone bills in charge. The committee consisted of R. V. Montague, J. M. Bell, M. W. Dimery, Mr. Clark, T. H. Pollock. After an hour's

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absence, the committee returned, and R. V. Montague, acting as spokesman, said:

Mr. President: In compliance with the orders of this convention your committee conferred regarding the resolutions offered here this afternoon by the resolution committee, after which we went to the state house, and ascertained that the committee which has this matter in charge held a meeting yesterday afternoon; that there was considerable discord among the members of that committee as to whether the resolution before them was advisable or not, and therefore the committee adjourned subject to the call of the chair.

We were introduced to Mr. Epperson, and Mr. Epperson comes out flatfooted in favor of that measure, and says he proposes to do everything in his power to see that bill become a law. He says his reasons for doing so are purely personal in character, resulting from the situation in Clay county; and taking that situation as a basis for his action he proposes to see that it does not happen to any other county in the state. He further says that in so far as he is concerned he is very much opposed to dual telephone companies, and that if he can do away with dual telephone companies he thinks it will redound to the benefit of the people of the state of Nebraska.

A more flatfooted Bell proposition I never heard emanating from a senator of the state of Nebraska, supposed to represent the people and supposed to be an independent senator; it certainly is amazing and shocking to an Independent man. We had no conference with the committee. Our sole conference was with Mr. Epperson. After our conference with him we returned. We have not conferred together in reference to making a report. But I feel that it is a blow against all Independent companies now existing or to hereafter exist in the state of Nebraska. I feel that it is time now for every Independent man in the state, for every citizen having the Independent cause at heart, for every man interested in free competition, to rise up and fight that bill from its foundation up.

Another thing, Mr. President, and this is my view and not that of the committee. I very much fear that a provision providing against free passes or any bill of that kind that might be introduced would have attached to it clauses which would defeat and overthrow the very objects of the resolution. And I earnestly request that before this convention adjourns you appoint a strong committee to bring this matter thoroughly before the people; have it in the hands of a legislative committee and give that committee full power to act, and do not stint them in funds, but let them bring this before the people. I have no fear for the results if the people of the state of Nebraska know the true situation and if the true situation is brought before that legislature and not that of the Bell.

All the executive officers of the association were re-elected, as follows: President, F. H. Woods, Lincoln; vice-president, W. S. Clapp, Kearney; secretary and treasurer, R. E. Mattison, Lincoln. The following were elected members of the executive committee: F. H. Woods and R. E. Mattison, Lincoln; C. J. Garlow, Columbus; W. E. Bell, York, and T. H. Pollock, Plattsmouth.

The chairman appointed a committee on legislation, consisting of T. E. Parmele, Plattsmouth; C. Killarney, Auburn; E. H. Towle, Falls City; R. A. Duff, Nebraska City; Albert Allen, Shelton; John Barsbey, Geneva; J. A. Bothwell, Hebron; C. W. Minemodier, Tobias; C. J. Garlow, Columbus; G. J. Woods, Lincoln; J. H. Ritchie, Seward; W. H. Camran, Beatrice; W. A. Garrison, Blue Hill; A. J. Brown, David City; J. E. Smith, Humboldt; J. H. York, Howard; W. E. Shipley, Hooper; C. P. Avery, Edgar; C. Vail, Arlington; I. D. Clarke, Papillion; F. M. Currie, Broken Bow; Fred Soke, Hildreth; A. R. Morris, Blue Springs; H. H. Hawkins, Dubois; E. C. Hansen, Fairbury; I. Walton, Blair; R. E. Mattison, Lincoln.

The executive committee held a session immediately after the adjournment of the convention, the results of its deliberations being summed up in the following statement:

The association, through its executive committee, will proceed as soon as possible to put into effect the important reforms recommended by the convention. Our association has reached a magnitude that makes it necessary for its component companies to adopt a permanent policy of giving a service so excellent that it will continue to hold the good-will of the telephone-using public, which it now possesses.

The improvements we will inaugurate are as follows:

The secretary of the association will issue a regular monthly bulletin, containing information on the telephone movement in this state. The first bulletin will appear March 1.

The association will issue specifications for standard toll line construction and standard toll line equipment. These specifications will be prepared from the best telephone authorities, adapted to local Nebraska conditions, and will be fully illustrated with cuts and diagrams showing the best methods of meeting the various problems of construction and connection. By the adoption of this standard the few ragged ends of our long distance service, which now compares with the best in the country, except in a few cases, will be brought together, and we will compete in toll service as effectively as we already have in local service.

The Telephone Traffic Association will at once complete the work of preparing a routing book and rate sheet, and will employ extra help to expedite the work.

The affairs of the association are in excellent condition. The method of assessing members of the association on a basis of ten cents per unit has proved very satisfactory, and the association has ordered it continued another year.

The South Dakota Convention

THE fourth annual meeting of the South Dakota Telephone Association met at Sioux Falls, South Dakota, January 9 and 10, 1907. The delegates were welcomed by E. D. Morcomb, secretary of the Citizens' Telephone Company of Sioux Falls. Between sixty and seventy local and long distance companies were represented by delegates.

To an inquiry by J. L. W. Zietlow, of Aberdeen, as to who might or might not be entitled to a seat in the convention, George W. Burnside, of Sioux Falls, replied that while there might not be anything on the books of the association to prevent other than Independent telephone company representatives from becoming members and taking part in the deliberations of the association, it was his understanding that the organization was for Independent telephone men only, and he was not in favor of allowing representatives of the common enemy, the Bell Telephone Company, or parties associated with it, a voice in the deliberations of the association. Mr. Burnside moved that it be the sense of the convention that no representative of the Bell Telephone Company or any company allied with it be given any recognition by the association. The motion received a second and carried without a dissenting vote.

The annual address of President C. B. Kennedy was full of valuable information, and received the undivided attention of the audience. He referred to the splendid work done by the Independent companies during the past year, and showed the association to be in a most flourishing condition. He thought, however, that the conditions of practically all the Independent companies could be bettered by a uniting of forces and pulling together for mutual welfare. He stated that the only company acknowledging allegiance to the Bell in South Dakota was operating in a small district in the eastern part of the state. He urged the harmonizing of conflicting interests and declared free telephones to be as pernicious as free passes on a railroad.

After the admission of half a dozen new members, George W. Burnside, of Sioux Falls, read a paper on "The Independent Telephone Exchange." To illustrate his subject he gave a short history of the development

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and progress of the Citizens' Telephone Company. He showed what great things had been accomplished in Sioux Falls and through outside connections by the Citizens' Company, and thought that, with the proper amount of push, any Independent exchange could be made a success.

George T. Hewes, of Des Moines, Iowa, spoke on "The Clearing House." He alluded to the local exchange as the clearing house through which the long distance lines have to operate. J. L. W. Zietlow, of Aberdeen,

Judge C. B. Kennedy, President.

talked on the "Proper Equipment of the Local Exchange," and was followed by P. R. Crothers, of Brookings, who read the following paper on

SHOULD TROUBLE MEN BE EQUIPPED WITH A TECHNICAL EDUCATION?

If I had been asked to confine myself to one word, yes or no, in answering this question, I would without hesitation say yes; but as the only limitations placed on my answer are my ability and your patience, I will endeavor to give a few of my reasons for arriving at the above conclusion.

To begin with, then, the duty of a trouble man is to locate and remove trouble from lines, cables, telephones and switchboards. After the trouble is located, its removal will depend as much on his mechanical skill as on his technical education; but to locate the trouble is sometimes the harder part. In order to properly diagnose a case the doctor must know something of the nature of disease and the anatomy of his patient. It is just as necessary for the telephone doctor to know something of the nature of electricity and to have a knowledge of the general construction and modus operandi of the apparatus under his charge. There are some who pose as trouble men who do not know the first principles of telephonic transmission, and this is no argument against my position. Of course, they know how to produce electricity; everybody knows that; all you have to do is to turn the crank. Such men destroy more apparatus than they repair. Some of these men in time make successful trouble shooters. They get their education in the school of experience. This is one of the most popular schools in the country. Among its students are many bright, successful men and many dunces. It has no faculty and gives no diplomas or degrees, and only graduates its students at their death; yet tuition is apt to be high. All honor to the school of experience! The man who gets his education there—if he gets it—is as worthy as though he acquired it in a school of technology. Nevertheless, my advice to young men that have an ambition to become successful telephone men is to equip themselves by taking a course in some good technical school. If they get to know too much for the position of trouble men their employer will no doubt promote them, or fire them, according to whether he places the same estimate on their abilities that they do themselves.

This brings me to the point, how much education should a trouble man have? And I answer, all he can get. He will never know it all. He ought to have enough at least so that when a complicated case of trouble arises his knowledge will enable him at once to reason out the cause of the trouble and the remedy. He ought to understand the use of testing apparatus and know how to make all necessary tests. He ought to learn to first locate his trouble before he begins to tear things to pieces. He ought to learn his own limitations, and know what to let alone. He ought to know what to do in case of trouble and why he does it. If he should learn something more than this he need not be alarmed, it will not harm him any. But some may ask, "What is the use of learning a lot of things that we never use?" The same question might be put to any of the students of our schools and colleges.

A certain professor in one of our colleges lately told his class he wanted them to forget everything he taught them as soon as examination was over. He said education was not a mere accumulation of facts, but rather a training of the mind, a developing of the reasoning faculties, a broadening of the intellect.

Nature has done much for us in giving us two hands; many wonderful things can be done with them, yet a fine tool placed in them will enable many things to be accomplished that could not have been undertaken without it. So also nature has done much for us in giving us a mind; many wonderful things can be done with it, but an education pushes back the horizon of its possibilities as the tool does for the hands. What is true of education in general is also true of a technical education for the trouble man. He can do things with it that he could not do without it; he is a better man and worth more to his employer because of it.

On the other hand, how often it is we see a young man with exceptionally bright talents along some particular line, yet so filled with conceit that he thinks that nature has done all for him that is necessary, and no one is more surprised than himself that he remains all his life in the ranks. He has refused to avail himself of the opportunities of education, and his ignorance has blinded him to his own possibilities.

I once knew a civil engineer who quit smoking because he thought it tended to dull his mind. He said he could not afford any habit that would weaken his powers, neither can a trouble man afford to miss any opportunities to add to his knowledge or increase his usefulness.

Yes, trouble men should be equipped with a technical education.

J. A. Steninger, of Parker, spoke instructively on the always interesting topic of "Are Two Exchanges in the Same Town a Double Burden on the People?"

Dr. E. R. Buck, Secretary.

E. A. Bruce, of Yankton, discussed "Independent Toll Lines." He gave many good reasons for the existence of Independent toll lines, and stated that it was his experience that the Independent toll line was an absolute necessity for the protection of the Independent exchange. He thought that without the Independent toll lines the Independent exchanges would soon be crushed out of existence.

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H. P. Hartwell, of Irene, had for his topic, "Telephone Associations," and urged the importance of every Independent telephone company belonging to an association. He thought the only thing for the Independents to do was to organize for the protection of each other.

A. S. Hall, of Redfield, took up a subject upon which there is some difference of opinion: "Is It to the Interest of Telephone Users That Toll Lines Connect with Local Exchanges on Equal Basis?" His arguments do not meet with the approval of many Independent leaders, but, as the matter is one of vital importance, Mr. Hall's paper is herewith given in full:

It seems to me that it is almost self-evident that any Independent telephone man must of necessity answer the question in the affirmative: "Is it to the interest of telephone users that all toll lines connect with local exchanges on equal terms?"

The whole fabric of our institutions is built upon the principle of equality before the law, special privileges to none; and however far we may depart from it in the stress and storm of competition, still, sooner or later, as fair-minded and honorable business men, must come to the proposition that what is for the interest of the many must be the rule of business life. The greatest good to the greatest number is not a worn-out formula, but a vital principle that must govern in business as well as in ethics, and any departure from it must eventually work to the harm of the aggressor, and cannot be defended even from a business standpoint.

With this by way of preface. Let us inquire into the motives that lead a toll company to refuse to connect with a rival or competing line. It is not supposable that any toll line has so much business that it is unable to take care of the additional business that would follow such connection, for the additional business would warrant additional equipment, and so in some degree increase the probabilities of profit.

And again, it is not the good of those now having connection that could possibly actuate a company in refusing serivce, for it is a well established principle of telephone law that the value of telephone service is in direct ratio to the number of telephones within call, so that any connection, however insignificant, adds in some measure to the value of existing connections.

Nor is it conceivable that a weak company would refuse to connect with a stronger one, for weakness always welcomes and never repels an alliance with strength; so we are forced to the conclusion that it is the strong company that objects to union.

If these premises are justly taken, why shall we not welcome a law by which, as common carriers, the connection of all exchanges, farm and toll lines is provided for on a just and equitable basis, insuring the transmission to destination of all messages, just as certainly as letters through the postoffice, telegrams to however distant points, packages by express, or a car of merchandise by freight, from one end of the country to the other.

If the refusal to grant the prayer for connection on the part of the toll company is fear that a rival will be built up, or that territory will be occupied by another that is coveted by the larger company, or any other reason that will not bear scrutiny, or that works to the detriment of the general public now using, or soon to use, the telephone fo rany of the uses of business or social life, then this policy is destructive and not constructive, to be condemned and not commended, and, in a word, indefensible from any standpoint.

If the Illinois Central railroad, for example, should refuse to accept freight whose destination was a point beyond their lines, the Interstate Commerce Commission would, I think, at the direction of our "strenuous President," be very soon sitting upon their case if not upon their necks. Yet this is exactly what is done every day by certain telephone companies in this and every other state, notably by the American Bell and allied companies.

How this policy can be defended, even from the viewpoint of a stockholder, much less that of a patron of the company, is a matter too deep for me, but to the unitiated it would seem to be a case of "the public be damned!"

This association has in the past maintained at Pierre, during the sessions of the legislature, a representative whose duty it was to lobby against bills that compelled the connection of toll and Independent or co-operative companies, and has reported the result of such effort to this association.

Now I do not want to be thought a critic of the past action of this association, but may the time not have arrived when a different policy shall be inaugurated and this association go on record as favoring the connection of all toll and local telephone companies on equal terms?

I do not see how this can work a hardship to the toll company, as the law must fix a just and equitable rate of compensation between the companies, and it will certainly be a boon to the users of a great public utility, whether patrons of the one company or the other.

But admitting for the sake of argument that it is not to the financial advantage of the toll company to connect with all local companies, yet no one could successfully maintain that it was not for the benefit of the telephone user, then how can we, as an Independent telephone association, take any other position than one favoring such a connection, even if it must be compelled by the strong hand of the law.

It cannot be urged that such a law is revolutionary, for already it makes such provision in the case of common carriers such as railroad and express and telegraph companies, and if the provisions of the law are equitable, how can it work injustice?

In conclusion, let me urge that this association put itself on record as favoring such a broad-minded and equitable measure as shall weld into one harmonious whole the somewhat conflicting interests of the telephone companies of this grand commonwealth.

On motion the name of the organization was changed from South Dakota Telephone Association to South Dakota Independent Telephone Association. Six more telephone companies were admitted to membership in the association.

The following committee was appointed by the president to investigate the advisability of the state association applying for membership in the national association, with the understanding that the committee should make a report at the evening session: George W. Burnside, Sioux Falls; H. P. Hartwell, Irene; T. C. Cockerell, Sioux City, Iowa.

P. R. Crothers.

The committee appointed to make a report on the policy of toll line connections with town exchanges reported that all toll lines should connect with town exchanges on equal terms.

The following were appointed members of a committee to formulate a specific plan for such connections, with instructions to report at the next annual convention of the association: E. A. Bruce, Yankton; J. L. W. Zietlow, Aberdeen; C. B. Kennedy, Canton.

P. R. Crothers, of Brookings, a member of the taxation committee appointed at the last annual convention, made a verbal report to the effect that, while the committee had not been able to accomplish much, it had been able to secure quite a material reduction in the assessment of farmer lines. The report of the committee was approved and the bill of Mr. Crothers for expenses

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in making the trip to the state capital to appear before the state equalization board was allowed.

The following members were appointed as a taxation committee which is to serve for the ensuing year: P. R. Crothers, Brookings; H. P. Hartwell, Irene; P. A. Zollman, Alexandria.

President Kennedy appointed the following as members of the legislative committee for the coming year: G. W. Burnside, Sioux Falls; P. R. Crothers, Brookings; W. E. Egge, Centerville. The committee will look after general legislation in which the association is interested.

On motion the city of Mitchell was selected as the place for holding the next annual convention. The constitution fixes the time for holding the convention as the second Wednesday in January, 1908.

The present officers were re-elected for the ensuing year, as follows: President, C. B. Kennedy, Canton; vice-president, J. A. Steninger, Parker; secretary-treasurer, E. R. Buck, Hudson.

The following members of the executive committee also were re-elected for the coming year: George W. Burnside, Sioux Falls; H. P. Hartwell, Irene; H. B. Ryan, Beresford; P. R. Crothers, Brookings.

The new arbitration committee for the ensuing year was announced as follows: A. S. Hall, Redfield; H. P. Hartwell, Irene; George W. Burnside, Sioux Falls.

The salary of the secretary of the association was fixed at $100 per year, to date from January 1, 1906.

The committee appointed to investigate the advisability of the association applying for membership in the International Independent Telephone Association recommended that the matter be referred to the executive committee, with authority to take such action as was deemed best.

Following the convention the visiting telephone men, together with a number of local telephone men and other citizens, were guests at a banquet given at the Cataract Hotel.

Meeting of Wisconsin Independents

A LARGE attendance and great enthusiasm characterized the annual meeting of the Independent Telephone Association of Wisconsin, which was held in Turner Hall, Madison, Wisconsin, January 16 and 17, 1907.

The delegates were welcomed by Mayor Schubert who said that he regretted that he had no key to the city to offer to the delegates, but that the loss would not be felt for the key had been lost long ago and the town had gotten into the habit of being wide open to all its visitors. He spoke of the importance of the telephone industry in our modern business and social life and expressed the opinion that state and county officers should give more attention than they do to matters connected with it.

President Valentine then delivered an address, containing statements of the conditions in Wisconsin since one year ago, and explained that the meeting had been called principally in the interest of President H. D. Critchfield of the Milwaukee Independent Telephone Company and Wisconsin Independent Long Distance Company. He said that the Independent movement was growing steadily. Companies having 200 telephones a year ago now have 300 and companies having 1,000 instruments the same length of time now claim 1,500. This has been about the increase throughout the state during the year just past. He said that all the companies had been spending money lavishly in extending their lines and in furnishing better equipment and in thus rendering better service. The telephone business was conducted something after the manner in which a farmer down in Iowa conducted his farm.

This farmer said that he raised hogs and sold them to buy corn to feed more hogs. Telephone companies, with a desire to better the communities in which they operate, put in telephones and use the money received for them in putting in more telephones.

President Valentine also explained the litigation being carried on to enforce the discrimination rate bill passed by the last legislature, and was followed by Attorney F. C. Grant, of Janesville, who was the attorney of record in the matter, on the legal status of the bill. Mr. Grant said that the fight was for the purpose of compelling the Bell people to charge a uniform rate in all cities of similar size throughout the state. "For instance," said Mr. Grant, "the cost of equipping and installing a system in Ashland is about the same as the cost for equipping and installing a plant in Beloit, yet the rental for the telephones is likely to vary by many dollars. To prevent the charging of $5 per month in Oshkosh and the charging of $1 in Madison is the desire of the Independents." By not obeying the state law, said Mr. Grant in effect, the Bell Company may put in its instruments for practically nothing in towns where competition is particularly strong and charge excessive prices in places where the field is clear. By this method no city can get a square deal. Some are bound to be discriminated against. All are bound to suffer in some degree.

J. B. Ware, secretary of the Michigan State Independent Telephone Association, spoke of the rapid growth in Michigan and briefly outlined the campaign for telephone freedom as it was waged in the days of 1896. At that time the Bell people, he said, had but 3,000 telephones in the state, while in the United States they owned no more than a quarter of a million. Today the Independent companies in Michigan alone own and operate over 80,000 instruments. In those days it was impossible to interest men of large means in the Independent telephone proposition because of the many suits which the Bell people brought against the Independent companies for the infringement of patents. Thus the fight had to be carried on by companies with many small stockholders. However, as time went on, and decisions adverse to the Bell Company were rendered, men with money entered the field and it was not long, he said, until success came. But it cost the manufacturers of instruments, and the Independent companies, over $40,000 to win the fight, he confessed.

Since the winning of the early fights inspired the confidence of the man with means, the progress of the Independents has been unchecked. All over the country has been spread a network of their wires, and the end is not yet in sight. The idea of the Independents has been to build up the communities and be satisfied with a modest profit. No Independent concern, he claimed, has ever put on the screws in a town where it had the whole field; and it is to this reputation for fairness which has gone abroad that the steady growth of the anti-trust business has been due. The men composing the Independent companies went into the business knowing full well the oposition that would fall to their

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lot, but, even with this in sight, they have gone forward in the past just as they will in the future.

Mr. Ware referred to the referendum elections in Canada where a large majority of the municipalities voted to install long distance lines and exchanges under municipal ownership. He also explained the very successful operation of the Michigan Independent telephone clearing house under the supervision of the state traffic association.

Mr. Critchfield presented, in a few opportune remarks, the intentions of the Milwaukee Independent Telephone Company and the Wisconsin Independent Long Distance Company for 1907 and announced that the Long Distance Company was ready to take contracts at once for long distance connections with lines which would be immediately constructed.

Charles S. Norton, secretary of the Indiana State Association, made a talk on district organization which was appreciated by all who heard it.

Committees were chosen on clearing house, district organization, nominations and membership, each congressional district being entitled to representation on said committees.

The second day's session was called to order by President Valentine. H. D. Critchfield, of Milwaukee, presented the following resolution which, upon motion, was adopted by the convention:

Resolved, That this association amend its constitution and by-laws so as to allow all individuals that are interested with the Independent telephone companies of the state of Wisconsin to become members of the Independent Telephone Association of Wisconsin, when recommended by the executive committee.

At the afternoon session the meeting was addressed briefly by President J. B. Hoge who presented the needs of the International Association, his appeal securing a gratifying response.

J. C. Harper, of Madison, chairman of the committee on district organization, then submitted the following report, which was approved by the convention:

REPORT OF THE COMMITTEE ON ORGANIZATION.

1. We invite and urge every Independent telephone company of the state to at once affiliate with this, the Independent Telephone Association of Wisconsin.

2. We recommend the immediate organization by congressional districts of all Independent companies. Where not feasible so to do, to combine those districts as per the recommendations of the presidents of such districts.

3. We recommend that within thirty days all districts as suggested each meet in convention and effect temporary organizations with a view of making same permanent at time of adjourned meeting of the state association; each district convention to adjourn their said convention and meet at the said state meeting.

4. We recommend the securing at once of a state organizer, to work under the state association and assist the officers of the districts, that quick and effective district organization may be completed.

5. We further recommend that the state association raise and appropriate the sum of $2,000, to pay the expense, or such portion thereof as is necessary, to complete the organization of districts as outlined.

6. We recommend that each district chairman call said convention at such time as the state association officers may designate, that the organizer and other leaders may be present at all, that uniform action may be had as far as possible.

The report was discussed by several members and the committee on organization empowered to collect the sum of $2,000, in a manner aside from dues or assessments on members.

The committee on nominations announced that its report would be made at the adjourned meeting of the association and the committee was ordered continued.

The committee on clearing-house reported as follows: "Your committee on clearing house beg leave to submit the following: That, after considerable talk with Mr. Norton, of Indiana, we find that we favor the idea of a clearing house for the handling of long-distance or toll line business, the same to be of mutual origin, consisting of the different companies, but the form and conditions of such origin cannot be perfected without much work and forethought. There not being time for the same, we ask to have your committee on organization instructed to appoint a clearing house committee of three and that the state organizer be one of that committee to take up the matter."

The committee on membership reported as follows: "Your membership committee recommend that the membeship fee be reduced to $2, and the annual assessment to be not more than one cent per each telephone operated by the company and one cent per each unit of toll line."

The committee on membership was ordered continued until the adjourned state meeting and a committee of three was appointed on amendments to the constitution, to report at the adjourned meeting. The chair appointed on such committee Messrs. Critchfield, Harper and Goodrich. After much discussion, the convention was adjourned to meet on March 7 and 8, in the same hall if possible, at Madison, Wisconsin.

A hearty vote of thanks was tendered the Dane County Telephone Company for the use of Turner Hall in which the convention was held. Voluntary subscriptions of several hundreds of dollars were then handed to the secretary for the purpose of defraying the expenses of the district organization and the meeting was adjourned to meet on March 7 or 8, 1907.

The convention was followed by a banquet held at 8:30 p. m. at the Capital House, which was largely attended.

From 125 to 150 were in attendance at the convention, representing over sixty different companies. Fifteen supply houses and manufacturers were represent either by apparatus or representatives.

Vermont and New Hampshire

"BUST the trust" was the watchword of all members of the Vermont and New Hampshire Independent Telephone Association, which recently held its fourth convention in the parlors of the Hotel Low at Bradford, Vermont.

When President H. W. Buchanan called the convention to order there was about seventy-five people present, representatives of the thirty-three companies in the association, with their wives, representatives of various supply houses and others. G. W. Buzzell of St. Johnsbury, the secretary, read a report which covered a great deal of matter of general interest to Independent companies, dealing with growth, construction and litigation, urging the use of the shield, the sign of the Independent movement, and urging all members and all interested in Independent lines to stand together against the encroachment of monopoly and for the rights and interests of the people.

"We have shown the people and legislature of this state," he said, "that we are a power and that we are united to protect ourselves and the people from the unjust iron rule of the Bell Telephone Company. Our associa-

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tion has been the means of making some laws for our protection and there will be more made as we need them, and every Independent, non-Bell company in Vermont and New Hampshire should belong to this association for its own protection and the protection of its patrons."

The following resolution offered by him was adopted:

"Resolved, that we, the Independent non-Bell telephone companies, constituting the Vermont and New Hampshire Independent Telephone Association do rejoice and are glad at the success of the Metropolitan Independent Telephone Company of Boston in securing a franchise of that city against the wishes of the great monopoly, the Bell Telephone Company, and their sympathizers, and we further extend our sympathy to the men behind the guns in this great fight for their rights. When Boston and the other large cities in which franchises have been granted to Independent telephone companies are installed we will be glad again. That is what we are waiting for in Vermont and New Hampshire, 30,000 telephones strong, and further we offer our service in any way that may be beneficial to the Independent movement in Boston or elsewhere."

The officers elected were: President, H. W. Buchanan, Bartin Landing, Vermont; vice-president, O. D. Eastman, Woodsville, New Hampshire; secretary and treasurer, G. W. Buzzell, St. Johnsbury; executive committee, H. W. Buchanan, G. W. Buzzell, O. D. Eastman, Woodsville, New Hampshire; Fred C. Gleason, Warren, New Hampshire; D. L. McGuire, Albany, Vermont.

A resolution was adopted thanking the officers for their work in securing legislation.

Several speeches were made at the afternoon meeting, among those who addressed the representatives being F. E. Eversole, manager of the Northeastern company at Portland, Maine, who told of the growth of the Independent movement in that state and of its beginning in the west; W. E. Kinsman, manager of the Heath Company of Shelburne Falls, Massachusetts, which is extending into Vermont; W. H. Johnson of Laconia, New Hampshire, manager of the People's Company, founded by M. Storey, now with the New England; W. A. Perkins, manager of the Strafford Co-operative Company; C. A. Washburn and C. C. Speare of the Orange County Company, J. W. English of the Hartland Company, and representatives of some electrical houses. The speakers are told of the success and steady growth of the Independent movement and were bitter in their denunciation of the Bell telephone monopoly.

A banquet was served in the dining room of the hotel in the evening. Fred C. Gleason, of Warren, New Hampshire, one of the executive committee, was toastmaster and the speakers were: H. L. Moore, Barton Landing; J. B. Peckett, Bradford; Captain Lucas, Lake Morey; A. L. Speare, West Corinth; W. E. Kinsmore, Heath, Massachusetts; L. G. Lyman, White River Junction; C. M. Libby, South Rygate, F. C. Whitman, Boston; C. D. French, Canaan; G. B. Shaw, Exeter, New Hampshire; C. A. G. Jackson, Boston *Herald;* S. Gorden, Ashland, New Hampshire; F. C. Redfield, Rochester, New York; J. C. Blood, New wich; W. E. Smith, Colbrook; W. J. Griffith, New York; E. D. Gilson, East Burke; G. W. Buzzell, St. Johnsbury; Fred Bowker, and the Rev. Henry Kilburn, Bradford; W. A. Peterson, Boston; W. A. Barber, Heath, Massachusetts; A. D. Richmond, Boston; D. L. McGuire, Albany; W. B. Johnson, Laconia, New Hampshire; E. B. Seelye, Boston.

The members present at the meeting represented about 30,000 users of Independent telephones, and the business is steadily being extended. They cover a territory reaching from Penacook, New Hampshire, into Canada, and back to Berlin, New Hampshire, and from White River Junction to Wells River, taking in a large part of the eastern section of the state.

One of the purposes of this association is to form a strong combination to oppose the Bell monopoly. One article of the constitution provides that no member of the association shall give exchange service with any telephone company not a member of the association.

Attempts were made to secure favorable legislation at the recent session of the Vermont general assembly. The net gain was the passage of an act providing that:

"Every railroad corporation doing business in this state shall grant to every person, firm, joint stock company or corporation operating a public telephone line in this state equal and reasonable terms, arrangements and facilities for the installation of telephone instruments on the lines or connected with the telephone system of such person, firm, joint stock company or corporation, in all depots, station houses or offices of such railroad corporation in the state of Vermont."

This was aimed at the Boston & Maine railroad, which has an exclusive contract with the Bell Company for the placing of telephone instruments and booths in the stations of that company. The Independent companies, which have about 8,000 subscribers along the line of the Boston & Maine, had been refused permission last October to place instruments in these stations, the reason alleged being the existence of the contract and the belief on the management that better public service would be given by a contract with one company alone. Since the passage of that act negotiations have been renewed and the company has expressed its willingness to allow the installation of instruments, and only the details remain to be arranged.

Iowa Plans Convention

The eleventh annual convention of the Iowa Independent Telephone Association will be held at Sioux City, Iowa, March 19, 20 and 21. It is expected that the attendance will be a record-breaking one, and the committee in charge has done its best to produce an unrivaled program, of which the following is a synopsis:

Tuesday, March 19.—Address by the president; reports of officers; paper by F. McNally, Carroll, Iowa, on the advisability of appointing a state toll line inspector; paper by W. J. Stanton, Waterloo, Iowa, on the necessary standardization of clearing house toll lines and equipment. The evening will be devoted to the inspection of exhibits.

Wednesday, March 20.—Address of welcome by Mayor W. G. Sears of Sioux City; responses by representatives from neighboring states: South Dakota, Judge C. B. Kennedy, Canton, S. D., president of the Independent Telephone Association of South Dakota; Nebraska, R. E. Mattison, Lincoln, manager of the Telephone Traffic Association of Nebraska; "Ourselves" (report of state agent for past year), G. A. Hollis, Hudson, Iowa; address by James B. Hoge on the work of the International

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Association; paper by W. D. Dunsmore, Oskaloosa, Iowa, on economy of construction, labor equipment and management. Afternoon to be used by representatives of farmers' and mutual companies. In the evening Paul Latzke will give a stereopticon lecture on "A Fight with an Octopus."

Thursday, March 21.—Clearing house report for the past year and prospects for the future, by Geo. T. Hewes, Des Moines, manager of Iowa Clearing House; paper on "Independent Long Distance," by E. E. England, Mount Pleasant, Iowa; "Hints on Management of Traffic," by Roy Walker, Des Moines, manager of the Mutual Telephone Company. At the afternoon session new business will be transacted and officers elected for the ensuing year, and A. T. Averill, Cedar Rapids, Iowa, president of the Corn Belt Telephone Company, will speak on "Conservative Financing." In the evening the annual banquet will be held.

C. H. Smith, chairman of the committee on arrangements, is desirous of making the stereopticon lecture a feature of future benefit to the Independent cause and requests managers of telephone companies to send him original photographs of their exchange buildings. Manufacturers are invited to send photographs of their plants. From these photographs lantern slides will be made, and with each picture, as it is thrown on the screen, a brief description, boiled down to a few words, will be given by the lecturer. The object is to educate the public to a realization of the importance of the independent telephone field.

Arrangements have been made for one and one-fifth fare on all railroads entering Sioux City. When buying a ticket it will be necessary for the purchaser to secure a receipt from his local agent, and it will then be arranged at Sioux City for him to return at one-fifth fare. Ample accommodations have been secured for the exhibitors at the Garrettson hotel, where reservation of space should be made.

North Dakota Independents Meet

A meeting of representatives of the Independent telephone companies of North Dakota was held at Grand Forks recently. Among those present were A. B. Cox, of Valley City, secretary of the North Dakota Independent Telephone Company; John Carmody, of the Hillsboro Telephone Company; L. D. Richardson, of Fargo, general manager of the North Dakota Independent Telephone Company; W. F. Baillie, of the Hunter Telephone Company, and Mr. Lain, of the Kensal Telephone Company. The object of the meeting was to discuss affairs pertaining to Independent telephone organization in the state, and it was concluded to call a general meeting of the Independent operators in Fargo some time in May, at which time an organization will be perfected for the mutual protection and financial benefit of all interested.

Province of Manitoba*

Bulletin No. 5

Hon. Colin H. Campbell, attorney general, in introducing the second reading of bills Nos. 28 and 29 (No. 28 being "An Act Respecting Municipal Telephone Systems," and No. 29 a bill to amend "An Act Respecting Government Telephone and Telegraph Systems"), relentlessly portrayed how the political leader of Manitoba was used as a tool by the Bell monopoly. The speech follows:

Last year, in introducing these measures, I took occasion to refer to the reasons that actuated the government in legislating along the line of government and municipal telephone lines. These reasons were unanimously indorsed by the house. I am glad to say unanimous, because I have never seen any cause to have this matter, either in the house or out of it, dealt with in any other way.

I am sure that those in this province who have endeavored to make politics out of a non-party measure will have cause to regret that stand. The government had never taken that stand, but have always said this was largely a municipal movement and a municipal request, and it is that today. The amendments proposed by these bills had been made after consultation with the executive of the municipal union.

It is a matter of congratulation that we have had a campaign of education and criticism before these bills had been acted on. It is of incalculable advantage in knowing points to be safeguarded and protected, so that government and municipal ownership will have an opportunity to avoid pitfalls.

No bills or scheme was ever more carefully scrutinized and criticised, and we have now the advantage necessarily resulting therefrom. The most powerful corporation in Canada, with the exception perhaps of the Canadian Pacific railway, with all its legal talent, has given us the advantage of their advice, and we have listened to it with some profit.

While I must regret that some sophistical arguments and statements fooled some of the people and misled them, I rejoice that after the battle is over the overwhelming voice of the people is, as I felt sure it would be, against the corporations, and we remain as we ought to, true to the people as against the aggressions and selfishness of interested corporations. I look forward, sir, to a growth along these lines.

I do not intend to repeat the arguments heretofore advanced, but to deal with and answer certain criticisms that have been made by Mr. Edward Brown, the leader of the Liberal party, outside of the house.

Mr. Brown has charged this government with being insincere on the telephone question. He harped upon this for a long time. That charge I deny, but insincerity or some stronger word can only fitly describe, in my judgment, the actions and statements of that gentleman. By his actions, however, in connection with these telephone matters, Mr. Brown has well earned the soubriquet of Dr. Jekyll and Mr. Hyde, because for political inconsistency and insincerity it would be hard to find Mr. Brown's equal.

In his first speech as leader of the Liberal party in May last Mr. Brown states:

"I have for years been an ardent advocate of this principle (public ownership)."

His connection with the telephone history of this province, however, shows that this statement cannot be relied or depended on, for we find that in January, 1905, he heads the list of petitioners to the house of commons of Canada to this effect: In this petition which he signed, and his name stands first on the list, he says:

"That your petitioners are desirous of obtaining an act empowering them to construct and operate telephone lines throughout Ontario, Manitoba and the northwest territories in the Dominion of Canada under the name of the Northwest Telephone Company, wherefore your petitioners humbly pray that your honorable house may be pleased to pass an act for the purposes above mentioned, and as in duty bound your petitioners will ever pray."

Verily, this is a most peculiar way to demonstrate an ardent advocacy of public ownership.

Mr. Brown claims that he signed this petition to oblige a friend, without having any interest whatever in the future of

*Persons interested in the telephone situation in the Province of Manitoba should address Mr. F. Dagger, Provincial Telephone Expert, Parliament building, Winnepeg, Manitoba.

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the charter thus petitioned for. In making this statement Mr. Brown stands self-condemned as either a stool pigeon or as practicing chicanery toward public and municipal ownership. If he is the former, he is absolutely unfitted to lead the destinies of a political party, much less the government of this province. Are we to believe Brown was disinterested?

In regard to the latter hypothesis are we to believe that the successful and wealthy Mr. Edward Brown, who is said to have ousted the honest member for Birtle and gained the leadership of the Liberal party by his reputation for good business methods, that he so far fell from his pedestal as to sign his name to a document praying for rights to operate a public utility over such a vast area as Ontario, Manitoba and the northwest, purely as a matter of platonic friendship, and without an understanding that he was to receive any share of the profits likely to result from such a vast undertaking?

Whether he was a stool pigeon or not matters little, but the fact remains that when Mr. Edward Brown signed this petition he thereby convicted himself as an enemy to public and municipal ownership.

For certain reasons, which I challenge Mr. Brown to make public, this charter was forced through parliament in defiance of protests from this government, in opposition to the Union of Canadian Municipalities, and apparently against the wishes of Sir William Mulock, postmaster-general in the federal government. I will read a short explanatory and enlightening extract from Hansard:

"Extract from Hansard, March 17, 1905. 'Private Bills, Northwest Telephone Company. One the order:

"Third reading of bill (No. 28) to incorporate the Northwest Telephone Company, Mr. Turriff.

"Hon. William Mulock (postmaster general) Stand. Mr. W. F. Maclean: What is the reason for allowing this bill to stand?

"Sir William Mulock—I myself asked the gentleman who has charge of it not to press it just now, because it appeared to me *the more telephone companies were incorporated the more it might complicate the situation.*

"Mr. W. F. Maclean—All right.

"Sir William Mulock—That was the only object.

"Mr. W. F. Maclean—That is a good reason.

"Order allowed to stand."

This incident lets in a flood of light as to why Sir William retired and was replaced by the leading counsel of the Bell Company. Sir William was, everyone admits, endeavoring to serve the people of Canada in his telephone enquiry.

It is a matter of record that the standing committee on private bills in this legislature, on January 26, reported against the granting of any more telephone charters in this province. I will read that report:

"Your committee have considered the bill (No. 25) to incorporate 'The Northwest Telephone Company,' and the bill (No. 28) to incorporate 'The Independent Telephone Company of Canada,' and after very careful and full consideration of the principle involved for the incorporation of these companies, have agreed to report that, in their opinion, a better solution of the matters complained of, which the present bills propose to remedy, viz., correcting the abuses of monopoly, would be for the government, during the recess, to inquire into the whole matter of the telephone service, with a view to either taking over the present system in the province or building a new one to be owned and operated by the government for and in the interests of the people, and that, pending such inquiry, the bills be not proceeded with."

Further than that, representations were made to the Premier of Canada in March of that year to the effect that the wishes of the people of Manitoba should be respected, and requesting that the bill of the Northwest Telephone Company should be laid aside. Sir William Mulock made his statement after that letter.

"*Winnipeg, March* 4, 1905.

"The Hon. Sir Wilfrid Laurier, Premier of Canada, Ottawa, Ontario:

"Dear Sir—I am instructed by the executive of the government of the Province of Manitoba to write you in reference to a telephone bill. The matter of the telephone companies in Manitoba has been very carefully considered by a number of the municipalities and also by the government of the province and by the legislature at its last meeting. The unanimous opinion is that no further telephone charters should be granted until the government of the province has had an opportunity of investigating and of deciding as to the course they intend to take upon the government ownership, control and operation of the telephones in the province. The present condition of affairs is regarded as intolerable, and relief must be sought and obtained.

"Two telephone charters were before the legislature last session and the private bills committee reported a resolution, copy of which I inclose herewith. The legislature adopted the report of the private bills committee and subsequently the government announced that they would undertake the responsibility of looking into the matter prior to its next session, as the legislature of Manitoba believed that it was undesirable that a further charter should be granted, owing to the fact that it would complicate matters. Owing to the strong objection of the legislative assembly, which equally applies to the municipalities and prevails as strongly against the proposed bill at Ottawa as it would here, we respectfully submit that in a matter of this kind the wishes of the people of Manitoba should be respected, and we would therefore request that the present bill pending before the Parliament of Canada be either postponed to next session or that the operation thereof in the Province of Manitoba should be struck out.

"I have the honor to be, sir, your obedient servant,

"COLIN H. CAMPBELL,
"Attorney General."

On March 17, in the same year, the postmaster general of Canada stated, as I have shown you from Hansard, on the floor of the house of commons that he had asked the gentlemen who had charge of this bill not to press it, because it appeared to him (the postmaster general) that "the more telephone companies that were incorporated the more it might complicate the situation." The exact position taken by the private bills committee of this house in its report of January 26, 1905.

In the face of all this, however, this charter was granted by the Dominion government to Mr. Brown and his associates. The most substantial of these promoters is undoubtedly Mr.

Perhaps Mr. Brown can enlighten the people as to the ulterior objects which he had in view in making such desperate efforts to obtain the right to build a competitive telephone system in this province for corporate profit, when this legislature had already refused to grant those rights. Might I ask in the interests of the people of the province who paid for the enormous amount of lobbying which it must have been necessary to have employed in order to force this bill through the Dominion house against the wishes of the postmaster general, against the unanimous wish of this house and in face of the opposition of the Union of Canadian Municipalities? Because this bill of Mr. Brown's was opposed at Ottawa by the municipalities of all Canada.

The charter having been granted to Edward Brown and his allies, both discovered and undiscovered, and having received the royal assent to their bill on July 20, 1905, the people of Manitoba have a right to know why these rights and privileges, obtained in the face of such strong opposition, and at a large financial cost, were not taken advantage of, and why the Northwest Telephone Company did not proceed to provide the telephone service which it was morally obligated to do in the territory covered by this charter, which was obtained in face of the opposition of this province, the municipalities and Hon. Mr. Mulock.

Now, sir, I would like to ask where is that charter today? It is the duty of Mr. Brown to inform the people of Manitoba upon these points. What better proof is needed of the insincerity of Mr. Edward Brown than that he humbly prayed for an act empowering himself and associates to construct and operate telephone lines in Manitoba, and having obtained that act, neglected to take any steps toward the construction and operation of those lines. There is only one reasonable explanation why Mr. Brown did not construct a telephone system under this act, and that is that something transpired which made it more desirable for Mr. Brown and his associates to remain out of the telephone business than embark upon competition with the Bell.

When this act was petitioned for it was no doubt the bona fide intention of the petitioners to operate a telephone system or to dispose of the charter if it was obtained. As no telephone system has been constructed now after about two years, it is fair to assume that Mr. Brown and his associates in this bill are charter mongers, and that the rights fought for so vigorously, and obtained, as I have indicated, have been sold to some person or persons finding it profitable to secure these rights.

As no other company has made any effort to operate under this act, it is clear that it has not fallen into the hands of Bell competitors. Are we then not justified in assuming that it fell into the hands of the Bell Telephone Company as the only prospective purchaser to whose interests it would be to keep out a strong competitive company having Dominion rights covering the whole of the Canadian Bell territory, Quebec excepted? Mr. Brown should take the people into his confidence in these respects.

Whatever may be the motive for the extraordinary and vacillating conduct of this modern impersonation of Dr. Jekyll and Mr. Hyde, it is clear that four months after obtaining this charter to construct a competitive telephone system, we find him, at the convention of the Union of Manitoba Municipalities,

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at Brandon, acting in the role of a Bell telephone apologist, and stating in a written and therefore well deliberated address before that body that: "A dual system of telephones is a detriment to any community, increasing the cost to the users rather than decreasing the same," and I would remind you that this is the same man who, three weeks ago, gave as an excuse for signing the petition for the telephone charter I have referred to, that:

"He thought it might be a good thing for the people of this province to have some competition with the Bell Company."

Mr. Brown also stated in that address: "The Bell Telephone Company has a very extensive system and is strongly entrenched, and with their long distance connections are in a position to render the public splendid service at minimum cost. Their service in the main is very good."

Referring to the public ownership of telephones, this insincere politician stated at the same time: "The telephone business, in my opinion, cannot be conducted in the same way as waterworks, sewerage and electric light, owing to the condition of affairs which exist at present."

The condition of affairs being that, while he had been so anxious to establish a dual system four months previously, he had, for some unaccountable reason, become suddenly imbued with the idea that the Bell telephone monopoly must not be interfered with by the introduction of a competitive service, either by the adoption of public ownership or by any operations under the act which he humbly prayed the Dominion government to grant himself and his friends.

In order, no doubt, to give more effect to the role he was filling, of Dr. Jekyll and Mr. Hyde, at the same convention, after appearing as a Bell apologist and using the words I have just quoted, we find him moving two resolutions to the following effect:

"That the Manitoba Union of Municipalities shall be pleased to co-operate with the provincial government in the establishment of a telephone system throughout the province, the trunk lines of which shall be constructed and operated by the government at terms satisfactory to the municipalities, and that a committee, composed of Mayor Sharp of Winnipeg, A. W. Coldwell of Brandon, Alderman Harvey of Dauphin, Mayor Brown of Portage la Prairie, and Reeve Cochran of Blanchard, shall be appointed to deal with the matter."

The other resolution is: "That the Manitoba Union of Municipalities, in convention assembled, desires to place itself on record as being strongly in favor of municipal ownership and operation of all public utilities, such as waterworks, electric light, gas and telephones, and believes that the time has fully arrived when no further franchises covering these utilities shall be granted to private corporations."

In regard to the first resolution, every one in this house knows to what extent Mr. Brown has co-operated with the provincial government in the establishment of a telephone system throughout the province. Not only that, but this same Mr. Brown, at the next convention of the municipalities, most indignantly refused to act upon a committee, to which he was nominated, to confer with the government upon the telephone question.

Regarding the second resolution with which this man of many parts was mover, it must be noted, the day previously he had stated that telephones cannot be conducted in the same way as waterworks and electric light; and again, unless the private telephone charter which he had been the means of securing from the Dominion government had already been disposed of, under conditions which rendered its operation no longer desirable, which I assume would not have been the case without reasonable compensation to its incorporators, he was acting untrue to his associates in recommending that the municipalities should grant no further franchises to private telephone companies; because neither the Northwest Telephone Company or any other company but the Bell could carry on its business without such municipal franchises.

The position of Mr. Brown at this convention was: He first in his written address opposed public ownership of telephones, then he somersaulted and moved a resolution in favor of public ownership containing promises which he apparently never intended should be fulfilled, and finally, well knowing that the Bell monopoly does not require franchises from municipalities, he recommended that no municipal franchises should be granted to other telephone companies.

Who was to be the net gainer by all these manipulations of this insincere politician? I contend only the Bell Telephone Company. It is a fair question to ask Mr. Brown why he transferred his affections from the Northwest Telephone Company, of which he was leading incorporator, to the Bell Telephone Company? Why he went out of his way to point out the evils of a dual telephone service, and why he was so enthusiastic in his praise of the Bell Telephone service?

All this happened before Mr. Brown became leader of the Liberal party in Manitoba, but while he was coquetting therefor, and one would have expected that having accepted so responsible a position, he would have risen to the dignity of his office and dealt with important public matters more seriously, if not more consistently. It is, however, more difficult to throw away bad habits than to acquire good ones, and we find Mr. Brown in his first speech as leader of the Liberal party, in Selkirk hall, Winnipeg, still enacting the double part of a supporter of public ownership and an apologist of the Bell Telephone Company, for he states in speaking at that convention:

"I have for years been an ardent advocate of this principle, believing that municipalities should own their own waterworks, electric light and other franchises (he is careful not to say telephones), *and that any profit derivable therefrom should go where it belongs, to the people."*

His latest policy is that he would deprive the people of that profit. Referring to the Bell he says:

"It is useless to deny or ignore the fact that the Bell Company is strongly entrenched within the province of Manitoba and is giving on the whole fairly satisfactory service. There is, so far as I am aware, little complaint and no outcry on that score."

Here again Mr. Brown shows his affection for the Bell monopoly, for I can hardly conceive any man not interested financially in the operations of that concern making a public statement that "it is giving satisfactory service" and that "there is little complaint and no outcry against that corporation."

It is a sight for the gods to see this political Dr. Jekyll and Mr. Hyde advocating public ownership and eulogizing the Bell Telephone Company at one and the same time, and finally charging this government with insincerity. On this occasion also he stated:

"He would assert, however, that at the proper time such a scheme would be submitted and that an essential part of this scheme would be that there would be no debenture debt necessitated, in so far as either the municipalities or the province were concerned."

I would ask Mr. Brown today to explain how he proposes to carry out the policy, which he has just announced, to construct a complete provincially owned telephone service without necessitating a debenture debt so far as the province is concerned.

The truth is, Mr. Speaker, that this ambitious politician was so insincere that he outlined a policy, knowing at the same time he had not made up his mind what that policy was to be, for we find that in the Free Press of June 27 last he is reported as stating at a meeting in Carman that:

"The policy of the Liberal party upon the question will make it possible for the farmers to have telephones of their own without creating any debt, and apart from the first charge, which will not exceed $25, the charge for operation will not exceed 50 cents a month."

How does this policy compare with that for which the Liberal executive stands today?

What do you think, Mr. Speaker, of the leader of a political party who stated in June last that the farmers can obtain telephones at a first charge of $25 and that the charge for operation will not exceed 50 cents a month, and who for the past three months has encouraged his party henchmen to stump this province telling the same farmers that it is absolutely impossible for this government or the municipalities to install telephones in rural districts at a first cost of $100, and rent them at $1 per month; and yet this is the man who accuses this government of insincerity in its telephone policy! What does Mr. Winkler say as to these statements?

It is now open to Mr. Edward Brown to prove to the farmers of Manitoba that they can obtain telephone service at a first cost of $25, or go down to posterity as an insincere politician, or admit that he was only trying to humbug. Perhaps his allies and friends, the monopoly, will help him out of the difficulty.

During the past eight months this quick change artist has announced three separate telephone policies. He has made so many changes that the Free Press has stopped reporting his utterances. I do not propose to refer further to the first two, but to deal with his latest announcement, which is as follows:

"The Liberal party declares emphatically in favor of *complete government ownership* and operation of telephone system in the province, believing this to be the only practical solution of the question of coping with the existing monopoly."

This policy, which, by the way, cannot be carried out without the creation of a debenture debt by the province, would take away from the municipalities the right to build and operate their own systems; a policy which the Union of Municipalities has always contended for, and a policy which this government in its legislation has respected and will continue to respect in

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any further telephone legislation which it may enact. Mr. Brown himself stated in May last that the profit derivable from municipal enterprises should go to the people to whom it belongs, while today he proposes to take away that profit from the municipalities and divert it to the province.

If the telephone business is profitable when operated by the provincial government, it will be still more profitable when operated by a municipality, and inasmuch as 98 per cent of the service provided in a telephone exchange is local service, I contend that the municipality is the proper authority to control that service, if it so desires.

Moreover, I challenge Mr. Brown to produce one single instance where the municipalities as a body have expressed a desire for either provincial or federal ownership of the local telephone exchanges. Only the other day the municipalities of Alberta and Saskatchewan passed their opinion on this matter reported in the press as follows:

The convention reaffirmed the telephone resolution of last year, that present rates were exorbitant, that the government should own the long distance lines and the municipalities the local systems.

The mayor of Edmonton also said on the same occasion that Edmonton at the end of 1905 had a surplus of over $4,000 in the operation of its telephone system after wiping off a 20 per cent debt amounting to $3,400.

If Mr. Brown is a sincere politician instead of an opportunist, why did he not make his latest statement when he was asked for his views at the convention of the Union of Municipalities in November last, and why did he refuse to act upon the committee appointed by that convention to deal with the telephone question and consider the practical suggestions of its members for the improvement of the government's legislation.

The truth is that this outside leader of the Liberal party was hoping against hope that the result of the combined efforts of his followers and the Bell monopoly would have secured an emphatic defeat of the government and municipal legislation, and allowed him and his party to have crawled in under the policy of the Dominion government, and enabled him to employ the amendments to the railway act regarding telephones as a subterfuge for perpetuating the Bell monopoly in Manitoba.

Immediately, however, he discovered that the people of Manitoba had declared against the principles which he had been supporting, with the rapidity of a quick change artist he throws on one side the attire of a private telephone monopolist and appears before the public in the garb of a champion of public ownership of telephones.

In his haste, however, to avoid the impression that his new policy too closely resembled that of the government, he declares for complete provincial ownership, thereby proposing to entirely override the rights of the municipalities to own and operate their own systems, and thus force upon every municipality a telephone service under the absolute control of the provincial government, without regard to the wishes of the community.

Apparently realizing that his hurried pronouncement in favor of complete provincial ownership would offend the municipalities, this changeable gentleman adds the following rider:— Of course, there would be nothing in the proposed legislation to prohibit any municipality from establishing its own system if it preferred doing so.

If Mr. Brown can carry out a policy of a complete provincially owned system of telephones in Manitoba, and at the same time permit the municipalities to build and operate local exchanges, he must be endowed with some supernatural power, which may probably at some later date enable him to cause darkness and light, winter and summer, to prevail in this province at one and the same time, for if I understand the English language correctly, a telephone system, one part of which is owned by the province and other parts by different municipalities, would be provincial ownership in part only, whereas complete provincial ownership means ownership of all telephone business within the province.

There is no doubt whatever that Mr. Brown stands before the people today as a self-confessed opportunist, and that being himself conscious that he has copied the telephone policy of this government, he endeavored to confuse the public by using this incongruous language; a further evidence of his insincerity.

Mr. Brown proposes that the provincial government shall construct telephone systems throughout the province. Section 1, chapter 89, of the government's legislation, enacts as follows: The government of Manitoba shall have power to purchase, lease, construct, extend, maintain or operate within the province of Manitoba, telephone or telegraph system or systems.

If I understand the English language, Mr. Speaker, that means this government has power to construct not only a long distance telephone system, but telephone or telegraph systems *in any number* and *of any description in any part* of this province. Mr. Brown also states in his latest proposal that it includes the management of the telephone system by a commission. Section 13 of chapter 89 of the government's legislation also enacts that:

"The said government shall have power to appoint commissioners."

Before I close I will deal with an amendment to this clause proposed by the executive of the Municipal Union.

Finally Mr. Brown intimates that there will be in his policy nothing to prevent a municipality from establishing its own system, and it is hardly necessary to remind this house that the whole object of chapter 90 is to enable municipalities to establish their own telephone service, if they so desire.

After comparing the telephone policy issued by the Liberal executive with that of the government, every fair-minded person in this house or outside of it must admit that the two are identical, and that the result of the vote on December 18 forced Mr. Brown and his allies into a complete recantation of their former principles and converted or forced them into public ownership advocates.

Mr. Brown, speaking at Carman last June, laid great stress upon the rider to the last clause of one of the two resolutions which he moved at the Brandon municipal convention, which was to the effect that "the government's telephone proposition should be upon terms satisfactory to the municipalities."

The municipalities have indorsed this government's telephone policy.

This government formulated its telephone policy in response to the wishes of the municipalities, voiced through the Union of Manitoba Municipalities, and from the time it took up that question down to the present day, it has in every action given the rights of the municipalities paramount consideration.

This policy has been amply vindicated by the support which this government has received from the municipalities. At the last convention of the Municipal Union the government's policy was indorsed by a vote of the municipal delegates of 89 to 16, and more recently the executive of that union has tendered to this government a set of resolutions thanking the government for its action, placing on record its approval of the government's policy, and expressing its appreciation of the educational value of the campaign which the government has conducted; a campaign which the supporters of Mr. Brown used every effort to render ineffectual by aiding the Bell monopoly in the circulation of misleading and untrue statements, both as to the acts and the cost involved.

The recommendations of the Municipal Union, which are embodied in the amendments before the house today, were made in response to the invitation of this government, and while these amendments will render more effectual the carrying out of the government's proposition in detail, they in no way alter the principles embodied by the legislation passed last session.

There are two points recommended by the Municipal Union not as yet specifically dealt with by these bills, to which I will for a few minutes refer. They asked for the appointment of independent auditors to audit the accounts of the municipalities operating a system. That will be done. It is unnecessary to mention it in the act as it can be provided for under the power in the act regarding the making of rules and regulations.

The next point suggested by the union is that the commissioners "shall not be subject to removal except by a vote of the provincial legislature, the same as the auditor." When this bill reaches committee I will provide that the commissioners shall only be removed by the lieutenant governor or council for cause, and so put them in an absolutely independent position and removed from party politics.

Although the government has not had time to consider this request, I can assure them this will be carefully considered. Until we get well under way and have tried the men (commissioners) by experience to see if they are competent, it seems to me for the present inadvisable to make that provision, as it might have a bad effect and hinder and hamper the work if we had to call the house together to remove an incompetent commissioner. What I wish to assure everyone is that by this and subsequent legislation (if necessary) we will place the commissioners in an absolutely independent position.

I would like to call the attention of the house to clause 3 of the Municipal Union's recommendation: "That in the opinion of this executive it is essential for the success of a publicly owned telephone system throughout the province of Manitoba that local exchanges should be built in the chief centers, such as Winnipeg, Brandon and Portage la Prairie, therefore it is desirable, should these municipalities take no action in the matter of establishing municipal telephone systems by the first of April next, that upon receiving a requisition from a sufficient number of ratepayers desiring to become users of the telephone to enable systems to be constructed in these respective centers upon a remunerative basis, the government shall proceed, without delay, to establish a local exchange telephone service in any one of these places, or in all of them."

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The date, April 1 next, calls for immediate action by the municipalities named in the resolution, and I trust that they will immediately consider what action they desire to take.

The publication of the Municipal Union's report obviates the necessity for further comment on the provisions of the bills now under consideration.

The government has every reason to be proud of the course which it has pursued in regard to its telephone policy, a course which will be consistently followed until every part of this province shall be provided with a telephone service owned and operated by the people, and the evils of private telephone monopoly in Manitoba swept away. We confidently submit our record in this respect to the approval of this house and country.

Bell Sees Handwriting on Wall

That the Bell Telephone Company of Canada sees the handwriting on the wall is quite apparent from the penitent attitude which that corporation has been compelled to adopt toward the people of Manitoba.

The following item from the *Western Canadian,* which is published in its entirety, furnishes significant proof that this monopoly has for the time being laid aside the arrogant tactics of the past, and in the eleventh hour is repenting of its past deeds, and granting all kinds of concessions to its subscribers, in the vain hope of rehabilitating itself in the good graces of the people. The intelligent citizens of Manitoba are not to be hoodwinked by any such methods as these. The insincerity of this line of action is so transparent as to render the Bell Telephone Company an object of contempt in the eyes of those who have followed the history of that corporation in Manitoba from its inception.

Had these concessions been made years ago, and before the government had taken up the telephone question they would have been received by the people of Manitoba as evidence of a sincere desire to serve the people to the best advantage. At this date, however, such concessions only aggravate past offenses by exhibiting in a stronger light the evils of monopoly.

Concessions made at the point of the sword will be withdrawn as hurriedly as they were conceded, and if the Bell Telephone Company is laboring under the delusion that Manitoba intends to replace the sword of public ownership in its scabbard, as the result of such transparent tactics as that chronicled by the *Western Canadian,* it will find itself egregiously mistaken.

Here is the extract from the *Western Canadian*:

In our last issue we announced that free telephone communication had been established between Manitou and La Riviere exchanges. This week we are able to give the names of the subscribers on the La Riviere exchange. They are sixteen in all, viz.: M. M. Keating, William Ritchie, William Kerr, D. Mitchell, Robert Armstrong, James Morrow, J. R. Smith, Ken Henderson, Arch. Henderson, C. B. Law, Robert Pollock, William Whiteman, J. C. Stewart, R. A. Law, Ken Charte and Howard Windsor.

A double circuit, besides the regular long distance line, connects the two exchanges. This insures prompt service, as it is possible for two conversations to be carried on simultaneously between the exchanges.

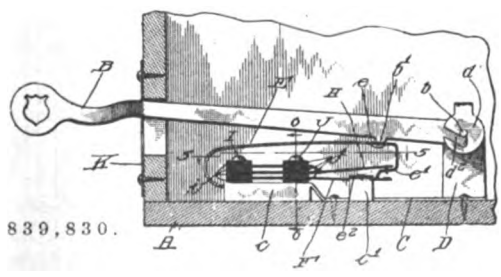
The addition of this exchange, with its sixteen subscribers, adds greatly to the value of our local service, and when it is further extended to include McKenzie, Mowbray, Snowflake and the country to the north of Manitou, we will have a service that is well worth the money.

Bell Will Have Hard Struggle.

Mr. Brown, leader of the Liberal party in Manitoba, has announced his telephone policy. It is for government ownership of the telephone throughout, allowing municipalities which choose to do so, however, to own and operate their own systems. It is evident the people of Manitoba are almost unanimous in their desire for public ownership of this utility, and no matter which way "the cat may jump" at the coming elections, the Bell Company will have a hard struggle against public ownership. As a representative of that company remarked, after reading the announcement of the telephone policy of the Liberal leader: "There doesn't seem to be much difference in the two policies."—*Western Canadian.*

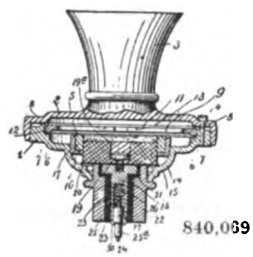
Recent Telephone Patents

839,830. Telephone hook switch. Foster. From time to time radical departures are made in the construction of certain portions of telephone equipment. At one period telephone receivers were made so that any tendency of the receiver shell to contract and expand in response to variations in temperature also had a tendency to affect the adjustment of the receiver. This difficulty was well understood, and the moment that a receiver was introduced in which the magnet system was supported as closely as possible to the diaphragm, this resulted in a complete change in the construction of the telephone receiver. Now all well-known receivers have their magnets supported from a point close to the



diaphragm. The same tendency to the adoption of a new departure appears to be presented in the receiver hook switch construction. By the present invention there is shown a popular form of hook switch in which the receiver support and a portion of the hook switch lever may be removed bodily from the telephone.

840,069. Telephone transmitter. Larsson. This invention is aimed at producing an improved form of granular carbon transmitter. It consists of a centrally



placed carbon block, surrounded by a felt ring pressing against a carbon diaphragm, granular carbon being placed between the carbon diaphragm and the centrally located carbon block. The diaphragm is held in place by means of an expanding ring and the entire casing is closed by placing over it the front of the transmitter, which is made cup shape.

840,200. Switchboard cord reel. Craft. In multiple switchboards of large line capacity it is important that all possible space be utilized for the spring jacks.

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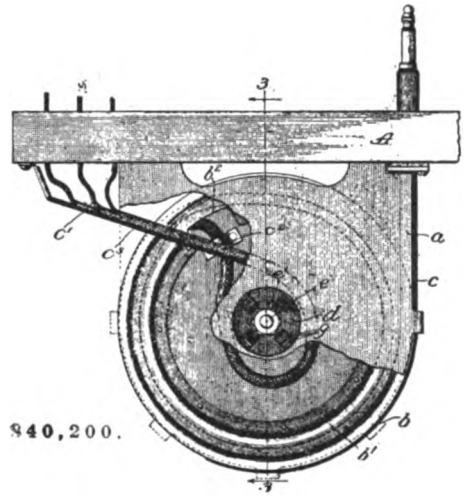
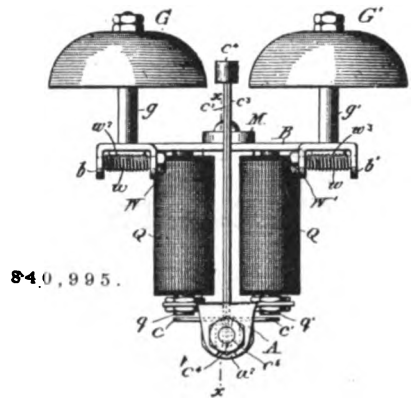
ingly long reaches are required to be made for connecting together spring jacks of a calling and called-for subscriber's circuit, the hanging of the cords with their cord weights becomes quite difficult, owing to the downward dropping space required for the cord weight. This in-



840,200.

vention is aimed at eliminating cord weights altogether, and provides a reel on which the cord automatically winds itself when the plug is withdrawn from the spring jack and returned to its set.

840,995. Method of poly station signaling. Dean. During the past few years telephone party-line selective signaling systems have been developed quite numerously. One of the important elements in a party-line system lies



840,995.

in the construction of the ringer mechanism. This invention is directed at producing a ringer of the tuned type, and as shown by the illustration the adjustment of the gongs toward the tapper is such that when the armature of the ringer is placed into contact with one of the pole pieces of the magnet, the tapper does not touch the gong.

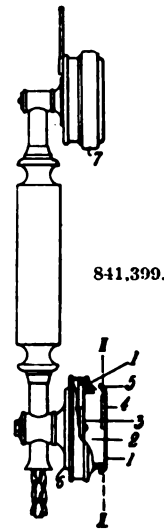
This method of adjusting is, of course, the proper way to adjust any telephone ringer. It is claimed as new, however, when considered in combination with the spring supported armature of a harmonic ringer. Claim 2 of the patent explains the arrangement quite fully and reads as follows:

"The method of selective, harmonic signaling, which comprises the following steps: communicating to a stiff-tuned reed, successive, small increments of periodic energy of proper frequency and thereby raising it from a state of inaction to a state of active vibration, storing up energy in said reed, and vibrating the same with gradually increasing amplitudes, and finally at the point of maximum amplification, interposing a positive stop to render dead a portion of the vibrating reed structure, whereby the entire cumulative energy will be imparted suddenly to the remainder of the reed structure to produce a stroke of sounding movement at such accelerated velocity as not to retard or alter the normal periodic vibration of the reed structure as a whole."

841,307. Electric annunciator. Blake. This is an annunciator of the type in which a signaling disk is enclosed in a colored liquid in such a manner that when the armature of the signal is attracted the disk breaks contact with the front window of the signal and this permits of the signal being recorded, owing to the colored liquid then being the color observed through the window, while when the disk is in contact with the window, as under normal conditions, the colored liquid is invisible.

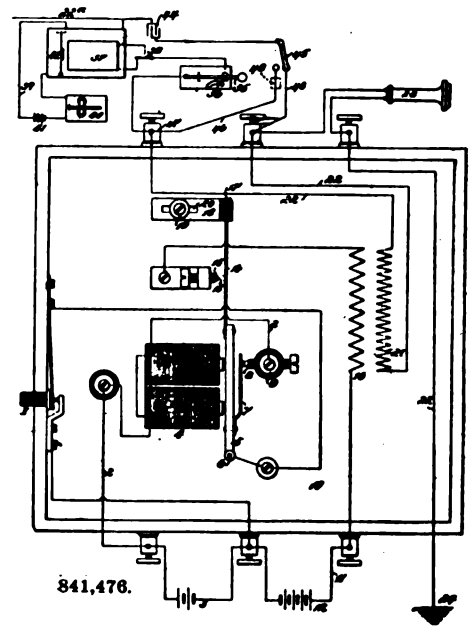
One of the advantages claimed for this signal is that the special construction adopted makes a very reliable construction, not likely to get out of order through the liquid escaping.

841,399. Compound telephone. Holmgren and Brahm. This is a telephone of the compound receiver and transmitter type, ordinarily termed "hand microphone outfit." In the present invention the transmitter cover is provided with special means for permitting the usual mouthpiece to be replaced by more hygienic means for carrying the sound waves against the transmitter diaphragm.



841,399.

841,476. Electrical calling apparatus for telephones. Randall. This invention relates to an electric calling apparatus for telephones used in composite telephone and telegraph systems. It is well understood that the ordinary hand generator is not suitable for signaling telephones connected to telegraph circuits. Vibrating reeds have been used to some extent, and this invention is directed at an improved form of construction in which the signaling current is generated through passing an interrupted current through the



841,476.

primary of the telephone induction coil and permitting the secondary current to pass over the line and produce the well-known siren or "howling" receiver call.

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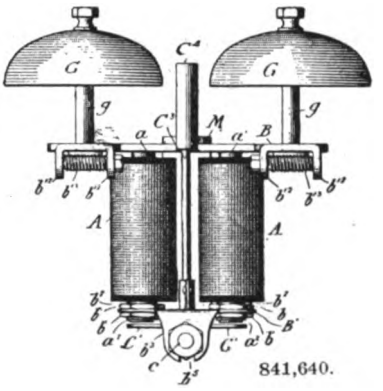
841,640. Method of harmonic selective signaling. Dean. In connection with this invention it is stated that in the harmonic selective signaling systems heretofore designed one of the systems employed a reed tuned to the exact pitch, while another was overtuned or undertuned, so as to allow for loss or acceleration in operation, and a third method of exactly tuning the mechanical elements has never before been accomplished, and it is the purpose of this invention to construct a polarized ringer having its armature so mounted in relation to the magnet coils and polarizing magnets that only when current of the proper frequency passes through the ringer coils for a sufficient period of time to start the armature is the desired effect produced.


841,640.

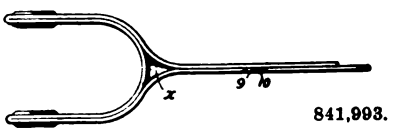
In considering the invention as applied to a four party selective system the following is a description of the operation:

Momentary currents of the right or wrong frequency will not effectively move any of the four armatures of the ringers in the four telephones. If the current continues to flow for a brief period, the armature of that station which is tuned to respond to the selected frequency gradually gets into motion, and as it is pulled over the strength of the magnetic pole strongly increases, and in order to get a powerful effect the inventor relies on what he terms "sheer brute force," discarding all delicate adjustments and safeguards and stripping the magnetic pole so that the armature may come into direct contact with it. Thus a maximum pull and a maximum effect of the bell clapper are obtained at the instant of possible interference due to the reactive vibration of the metal of the gong. It will be observed that the clapper is started owing to its being tuned exactly so that it will respond before striking the gong, and after it has started to vibrate the magnetic pole provides a stop for the armature and thus permits the clapper to give the going a sharp stroke and immediately rebound so as to eliminate any interference due to the vibration of the gong.

841,491. Telephone. Edwards. This is an invention aimed at saving the batteries of a telephone while a subscriber is listening on a line. The inventor very considerately states that this device may be applied to a bridging or party line type of telephone and manipulated in such a manner that the transmitter circuit will be disconnected and thus avoid deterioration of the battery "during such times as the operator desires only to use the receiver."

Undoubtedly the inventor has an intimate knowledge of the uses put to the ordinary farm telephone, and he provides a means by which the batteries may be cut out of circuit, and at the same time, when the switch is thrown to accomplish this result, it places itself into suitable relation to the switch so that when the receiver is finally replaced to the hook the downward movement of the hook lever automatically recloses the battery circuit.

841,993. Telephone switch hook. Manson. The latest tendency in the construction of telephone and switchboard apparatus is in the direction of making the parts out of sheet metal and thus permitting of forming up certain pieces of apparatus out of one piece of metal. In the present invention the hook switch of the telephone has received attention in the direction of forming the entire hook out of one piece of metal.


841,993.

Talks and Queries

By H. P. Clausen

EDITOR SOUND WAVES: Can you tell me what the effect will be on a grounded line that has thirty instruments of 1,600 ohms by placing instruments of 2,000 ohms on the outer end of line by themselves? Can the 1,600 instrument ring the 2,000 instrument, or can the 2,000 instrument ring the 1,600 instrument and get central, which is equipped with condensor and push button to ring central, without disturbing any of the subscribers?

You say that you now have a line equipped with thirty telephones with 1,600 ohm ringers. While you do not state the length of the line, it probably is of such length that when you go to one end of it and drive the generator at that telephone you are able to ring the bell of the telephone connected to the most distant extremity of the same line. Now, if you replace the most distant telephone ringer, which is now wound to 1,600 ohms, by installing a 2,000 ohm ringer, you will find that the signal received at the 2,000 ohm bell station is perhaps a little weaker than would be the case when the 1,600 ohm ringer is used. Then, if you go to the station from which you are signaling and install a 2,000 ohm ringer at this point, in place of the 1,600 ohm ringer, you will find that the signal received at the most distant station is slightly stronger than was the case before. This on account of ringing current being available by the ringer at the calling station. In other words, you gain more by increasing the power of the generator at the signaling station when installing 2,000 ohm ringers in place of 1,600 ohm ringers than you gain by installing a 2,000 ohm bell at the signal receiving station. It is only when you equip the entire line circuit with 2,000 ohm bells that the average signaling efficiency becomes more pronounced; providing, of course, that the generators of the telephones are of a suitable construction for supplying the higher resistance

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ringers with the current required for producing a satisfactorily strong ring.

On general principles it may be stated, however, that it is a very unusual condition which should call for installing higher than a 1,600 ohm ringer.

You mention certain means for calling central. We presume you have reference to using direct current generators. When a direct current generator is used the higher the resistance of your ringers in the telephone the more satisfactory will the signaling service to central be.

EDITOR SOUND WAVES: We need a couple of repeating coils or other apparatus to connect up private line subscriber on phantom circuit. We have a metallic No. 12 iron line, running twenty-eight miles northeast, with two toll stations cut in part way, making four drops in all on the line. This subscriber lives six miles north, one and one-half miles from the main line. Should this one and one-half miles be metallic or grounded line, and where should repeating coils or other extra instruments be installed?

Your inquiry is not perfectly clear. It appears as though you are going to opetate phantom circuits on the toll line and that you wish to know whether it is necessary to bring the two main line wires to the proposed phantom circuit extension in order to obtain a service.

This may be answered by stating that if you have a convenient place for installing the phantom coil it may be installed at the main line and a single wire extended to the proposed phantom station. Remember, however, that it is necessary to install lightning arresters at the point where the main line connects to the phantom coils.

From the above it is thought that you will understand that in order to construct a phantom equipment it is only necessary to connect the required apparatus to the metallic line wires, and that from that point on a single wire may be run any desired distance to the phantom station.

Regarding securing suitable apparatus for phantom service we draw attention to our advertising columns.

EDITOR SOUND WAVES: During a sleet storm a No. 14 copper wire broke and fell across a 1,700-volt alternating street lighting circuit and across the wires of our metallic telephone circuit. An examination of the pole house protection, which consists of fuses placed across a brass ground strip, showed that not only the two fuses of that circuit were blown out, but also two fuses immediately above and two just below. It is my opinion that these four fuses were melted by the heat of the arc to ground strip, as I found one brass washer fused tightly to the screwhead. The fuses at our distributing board were not affected at all; neither was the telephone nor the switchboard drop.

In all probability the copper wire which fell was melted in two immediately, which, of course, disconnected our telephone circuit from the electric light wire.

In your opinion, would we have had a damaging fire had the copper wire been of a larger size? The pole house is 100 pair size, with the fuses mounted on hard rubber strips. I would suggest that operating companies send in an account of damage done by lightning and high tension crosses, and also give an accurate description of the protection used.

Is the capacity of a cable increased by putting it in an iron pipe? What would be the objection of putting our switchboard cable in an iron pipe and then laying it under the floor?

When the telephone wire fell on the 1,700-volt alternating current street lighting wire there was an immediate rush of current from the point of contact to the telephone lead. At the telephone station the alternating current found too great an opposition for permitting it to quickly pass through the telephone ringers, which would offer considerable impedance. The path toward the cable pole, however, provided a means for the current to open the circuit, which resulted in blowing the fuse, and when the fuse blew it created an arc and undoubtedly materially assisted in grounding the circuit, and it is this grounding of the telephone circuit which caused the telephone wire to be burned in two at the point where it connected with the lighting wire.

It is possible that your central office protection was of such a character that it momentarily carried current from the lighting main. However, be that as it may, the result was that the 1,700-volt alternating current found a ready path to earth at your pole protection, and owing to the intense heat which the arc created it was natural that the fuses alongside should open up.

This is a case which should bring home to many the importance of protecting their incoming leads by suitable high potential current arresters outside of the cable. There are several devices on the market which have been proven by all manner of tests to meet extraordinary requirements.

You ask whether there would be any objection to putting your switchboard cable in an iron pipe and laying it under the floor. Not at all. This is frequently done where cabling is required to be strung under floors. The only time that any great trouble is had through running cables through an iron pipe is when wires carrying alternating currents are run through separate iron pipes. As long as two wires of a pair are left together and run through the same iron pipe no appreciable difference will be found in the transmission.

EDITOR SOUND WAVES: Please answer the following in your next query columns:

1. In putting a jumper copper wire on a new double galvanized iron wire, would it be better not to scrape the iron wire at all than to run the risk of scraping it too much, and thus exposing the iron?

2. At the terminal of an aerial cable from the south should the leads going east, west or north come first in the cable terminal?

When connecting together a copper with a galvanized iron wire it is not advisable to scrape the wire. Simply use some fine emery or sand paper; clean the wires and then make your joint.

In answer to your question regarding terminal connections for aerial cables, we do not exactly understand your inquiry. However, it may be possible that you desire information as to the proper numbering of the terminals as they leave the pins on the cross-arms. We therefore submit the following:

Present practice provides that when you are on a pole and facing north, the left-hand pin on the upper cross-arm is No. 1. The next pin, No. 2, etc., say to No. 10. If a ten-pin cross-arm is used, No. 11 will be the left-hand pin on the second cross-arm.

Obviously, this then gives you the pin numbers, and when it is remembered that the No. 1 terminal of the cable lead always must commence on top, it will give you the information required for a systematic distribution of the wires.

Now, as respects the numbering of the insulators on cross-arms setting at right angles to the above, or rather while facing west, the left-hand pin on the upper cross-arm again starts with No. 1, and so on down, as explained in connection with the numbering of the cross-arms while facing north.

At one time it was the practice to number cross-arms in the manner explained above, excepting that instead of facing north or west, the rule was followed that when the exchange was at one's back the left-hand pin on the upper cross-arm was No. 1. This rule, however, became inoperative when more than two or three exchanges were installed, for it left it a matter of opinion when one had his back to the exchange.

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Meeting of Kansas Association

The annual meeting of the Kansas Independent Telephone Association, which was held at Topeka, February 5 and 6, was attended by representatives from over one hundred companies. President W. H. Nelson, of Smith Center, presided over the deliberations of the assembly, and in the absence of Secretary F. M. Pearl, W. P. Hemphill, of Topeka, acted as temporary secretary.

In his opening address President Nelson made some very pertinent suggestions, among them the following:

We are fighting for existence against a powerful, well organized corporation; an organization with many years of experience and having behind it an almost unlimited amount of capital, furnished by the wealthy centers of the East; while we have endeavored to protect our interests by home capital and depending upon the loyalty of our neighboring small companies for our existence.

Of course, we have in recent years been organized by district associations and finally into a state association, where we would get together as now and talk over our affairs. No one will contend that these organizations have not accomplished much good, but is it such an organization of our interests as we need? Does it go far enough to protect us as it should be done? Our officers and executive committees have worked the best they know. They have freely given their time and paid their own expenses in furthering the work and in keeping our lines intact from the encroachments of the enemy, but with all their energy and loyalty there are many things, matters of importance, that escape them, which, if properly looked after, would have meant much to all our interests. We should have a competent, reliable man elected by this association, whose business it should be to look after our interests carefully and impartially. He should be a man of ability and skilled diplomacy, capable of looking after our affairs in a businesslike manner, and ready and willing at all times to give his time and attention to every detail of the work. Such a man would, of course, command a fair salary. But can we afford to drift along as we have been doing and take the chances of having our property depreciate in value, when by expending a few dollars our properties would be increased in value? I think not, and trust that at this meeting something along this line will be done. All the state organizations in which the Independents have been successful have adopted this plan and are well satisfied with it.

This plan will necessitate an increase in our annual dues, but the benefits to be derived will more than pay for the extra expense.

There should also be provisions made for regular meetings of the executive committee, at least quarterly, and the actual expenses paid while attending these meetings. Upon these gentlemen depends the actual business of the association, and it should not be compelled to give its time and pay its own expenses without remuneration.

Considerable time was devoted to the discussion of telephone legislation pending before the state legislature, especially to the bill making exchange of business between companies compulsory. State Senator Noftzger, who is the father of the latter bill, appeared before the convention and defended his position, but the consensus of opinion was that the passage of the bill would neutralize the advantages now possessed by the Independents in their fight against the Bell monopoly.

A number of very interesting papers were read, among them one by Miss Ethel Pankey, toll chief of the Topeka Independent Telephone Company, on "The Importance of Good Operators," in which she described the methods of selecting girls for telephone work and plans for improving their usefulness. Her paper, in part, is reproduced below:

The success of any telephone exchange is largely due to its force of operators. Without a good chief operator, capable assistant and quick and energetic operators it cannot expect to meet the requirements which the public demands. The greatest possible care should be exercised in selecting operators, choosing only those who come from the best of families. They should be girls of unquestioned standing in order to command the respect from the business and social interests. An operator should be made to feel that her work is a very important one to the company and that the manner in which she performs it must be one of the governing points upon which the success or failure of that exchange depends.

The public often refers to a young lady employed with a telephone company as a "telephone" girl, "central" girl, "hello" girl and various other titles which we consider disrespectful. Considering the class of our operators we feel that we owe them enough respect to give them the title of local or long distance operator instead of any of the others just mentioned.

An operator must be of unquestionable character and from seventeen to twenty-five years of age, of good health, perfect eyesight and hearing, clear and distinct but soft voice, not less than five feet three inches in height, arms not less than two feet two inches, and must be a resident of Topeka and living with her parents or near relatives.

An operator is never required to work more than two and one-half hours without a fifteen minutes' rest, at which time tea, coffee, soups and cereals are furnished at the expense of the company. A matron has full authority over the girls within the building when off duty. In connection with the kitchen and dining room there is a large and well ventilated recreation room which provides facilities for physical training and indoor amusement. Operators are furnished with books and magazines and everything possible is done to make their leisure hours both pleasant and profitable to them. A hospital room is also provided for the use of any operator who should become ill while on duty. Here we have such medicines and appliances as may be needed in emergencies.

Operators are encouraged to cultivate amiable dispositions and gentle and lady-like manners. In recreation hours as well as at all other times great attention is paid to the use of correct and refined language. Operators must be courteous in all their dealings with one another and must conduct themselves in a quiet and orderly manner while in the building.

The better the operators the better the service, so we should have a good force of operators working in harmony for the upbuilding of the service. And to do this we should put forth our most earnest efforts when we see the great results that hinge upon the proper training of operators.

Before adjournment the convention elected the following officers for the coming year: President, W. H. Nelson, Smith Center; secretary, W. P. Hemphill, Topeka; treasurer, C. L. Brown, Abilene. The following were appointed members of the executive committee: A. T. Rogers, Beloit; J. E. Byers, Ottawa; C. C. Van Deventer, Kingman; C. E. Betts, Atchison, and J. M. Boyle, Belleville.

A Strong California Corporation.

At Los Angeles, California, the Union Home Telephone and Telegraph Company has filed articles of incorporation. The authorized capitalization is $10,000,000, of which sum $150,000 has been subscribed. It is proposed to build a telephone and telegraph line from San Diego to Los Angeles and Bakersfield, from Los Angeles to San Bernardino, Los Angeles to Santa Barbara, and also systems in cities along the routes mentioned. Among the incorporators are John M. C. Marble, of Los Angeles; John E. Marble, of Pasadena; A. K. Detweiler, of Toledo, Ohio, and other well-known telephone men.

The Nebraska Telephone Bill

Herewith is given the full text of a bill introduced in the Nebraska legislature by Representative Whitman, the gist of which is to compel incorporated telephone companies to connect their lines with those of other companies:

Section 1. It shall be the duty of any incorporated telephone company doing business in the state of Nebraska to connect its lines with the lines of any other incorporated telephone company in any city or any village where such telephone company has now or may hereafter establish a public telephone station, and to provide the necessary switchboard and other apparatus necessary to connect the two lines for the transmission of messages over both. Provided, however, that the company

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desiring to establish such connections shall make a written demand upon the company owning such station at least thirty days before the connection required; and shall pay to the former company, before the expiration of said time, an amount sufficient to pay for the necessary apparatus and labor in establishing such transfer station.

Sec. 2. After the establishment of such transfer station, the expense of maintaining same and the profits derived therefrom shall be borne by such companies pro rata according to the business done by said companies, respectively, unless a contract shall be made by such companies otherwise providing.

Sec. 3. Any company desiring to make connection with any other company having an established station may, upon making the written demand and paying the expense as herein provided, maintain a suit in the district court of the county wherein such connection is desired to require such defendant company to install such connection, and it shall be no defense to such action that the amount tendered or paid is insufficient to meet the expenses thereof, unless such defendant company before the institution of the suit shall have notified the plaintiff company that a greater sum was required.

Sec. 4. The written demand or notice provided for in section 1 of this act may be served on said company by personal service thereof upon its president, secretary or general manager or other chief officer, or it may be served upon any agent of such company in the county wherein such connection is desired.

Sec. 5. Any company who shall refuse to comply with the provisions of this act or shall refuse to connect its lines with the lines of other companies as herein provided shall thereby forfeit all rights under its franchise in the city or village wherein such connection is desired.

Sec. 6. And this act shall take effect and be in force from and after its passage and approval.

Epitome of the Month

DOMINION OF CANADA.

BURGESSVILLE, Ont.—The Burgessville Telephone Company expects to build a line to Otterville this spring.

FORT WILLIAM, Ont.—The municipal telephone system has installed a new switchboard in the sub-station on Donald street.

BYRON, Ont.—The Independent system recently installed in this place has proved so successful that it will be extended to Komoka and other points.

BONAVENTURE, Que.—Application will be made to the Dominion parliament for the incorporation of the Bonaventure & Gaspe Telephone Company, Limited.

BERLIN, Ont.—President Detweiler of the Board of Trade, representing 360 members, has advised the establishment of a provincial and municipal telephone system.

REGINA, Sask.—The Saskatchewan Grain Growers' Association has adopted a resolution asking the provincial government to establish a long distance telephone system.

YORKTON, Assin.—The town council has decided to submit to the voters a proposition to buy stock to the amount of $10,000 to assist the new telephone company in completing its plant.

STEVENSVILLE, Ont.—The Welland County Telephone Company has spent $10,000 thus far in constructing telephone lines and expects to make many more extensions during the present year.

FISHERVILLE, Ont.—The Erie Telephone Company, Limited, is getting material on the ground for spring building operations. The company's Cayuga line will be extended from Nelles' Corners on the stage road.

MELITA, Man.—The Melita-Arthur Telephone Company made a net profit of 30 per cent during the fiscal year just closed. Ten per cent was set aside for a sinking fund and 20 per cent distributed in dividends.

NEW LISKEARD, Ont.—The capital stock of the Temiskaming Telephone Company has been increased from $25,000 to $200,000. Rates in all the towns wherein the company operates have been increased about 25 per cent.

CALGARY, Alta.—The Calgary Board of Trade, dissatisfied with the extortions of the Bell Company, has passed a resolution calling upon the city council to go ahead with the installation of a municipal telephone system.

FREDERICTON, N. B.—Dr. A. A. Stockton, M. P., of St. John, has been elected president of the New Brunswick Telephone Company, to fill the vacancy caused by the death of Hon. A. G. Blair. W. T. Whitehead was elected vice-president.

TORONTO, Ont.—The city council of Toronto will ask the Ontario legislature to submit to the electors of the province the question of constructing and operating trunk line telephones, the municipalities to have the right to operate local exchanges.

INNERKIP, Ont.—The Innerkip Rural Telephone Association is about to build fifteen miles of additional line. A dividend of 18 per cent was earned last year. President, J. G. Hossack, M. D.; vice-president, James Montgomery; secretary, George Dobson.

TORONTO, Ont.—It is likely that the city of Toronto will ask the Ontario legislature to submit to the ratepayers of the province the question of constructing and operating telephone trunk lines, the municipalities to have the right to operate local exchanges.

EDMONTON, Alta.—The government of Alberta has decided upon its third long-distance system, which will run from Lacombe to Stettler. With the completion of this line the government will have as many miles of line in the province as the Bell monopoly.

RICHMOND, Ont.—At the annual meeting of the Malahide and Bayham Co-operative Telephone Association Dr. A. B. Riddell was re-elected president and H. T. Goodwin secretary and treasurer. The service of the line cost the patrons the small sum of $3.50 for the year.

OTTAWA, Ont.—G. F. Shepley, K. C., has accepted a commission from the board of railway commissioners to proceed to the west to investigate the operations of express and telephone companies. It is desired to ascertain what rates are to be regarded as fair to the public.

DUTTON, Ont.—The Dunwich and Dutton Telephone Company expects to make a number of improvements during the spring. The following officers have been elected for the year 1907: President, W. A. Galbraith; vice-president, J. H. McIntyre; secretary-treasurer, W. H. Barnum.

ST. THOMAS, Ont.—A number of Houghton farmers have organized the Kingslake branch of the Houghton and Bayham Telephone Company, with James Boyd as president and J. Meharg as vice-president. A line will be built from Frogmore to Straffordville via Kinglake and Guysboro.

CAMPBELLTON, N. B.—A new telephone company will apply for a charter to build toll lines throughout the province. It will have a capital of $500,000, of which $150,000 has already been subscribed. The company will also work for the establishment of municipal telephone plants in the various towns of the province.

MARKHAM, Ont.—The Markham-Pickering Telephone Company held its general meeting at Whitevale and elected the following officers for the current year: President, Alpheus Hoover; vice-president, T. Beare. The number of subscribers was doubled during the past year and a handsome surplus accumulated, after paying for extensions and permanent reconstruction.

NEW COMPANIES.

LAFAYETTE, Ind.—A telephone system has been installed at the State Soldiers' Home.

NILES, Okla.—The Niles Telephone Company has been incorporated. Capital, $1,000.

EUREKA, S. D.—The Farmers' Mutual Telephone Company has been incorporated. Capital, $15,000.

COLUMBIA, Tenn.—The Columbia Rural Telephone Company has been incorporated. Capital, $1,000.

CASCADE SPRINGS, S. D.—The Cascade Telephone Company has been granted a charter. Capital, $1,500.

FARLIN, Iowa.—The Bristol Mutual Telephone Company has been organized here with a capital of $2,500.

BLUFF CREEK, Iowa.—The Bluff Creek Telephone Company has been organized by I. R. Cox and others.

FARGO, Okla.—The Blue Ridge Telephone Company has filed articles of incorporation. Capital, $1,000.

MCPHERSON, Kas.—The McPherson Rural Telephone Company has applied for articles of incorporation.

COOPERTON, Okla.—The New State Telephone Company has filed articles of incorporation. Capital, $25,000.

ELLENDALE, Minn.—The Ellendale Telephone Company has filed articles of incorporation. Capital, $10,000.

BYRON, Cal.—The Byron Farmers' Telephone Company has been organized by Volney Taylor and others.

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HAMILTON, Mo.—The Hamilton Telephone Company has filed articles of incorporation. Capital, $30,000.

MONTROSE, Colo.—A co-operative telephone company has been organized here. A. R. Walker is president.

UVALDE, Tex.—The Uvalde & San Antonio Telephone Company has been incorporated here. Capital, $10,000.

GALATIA, Ill.—The Galatia Independent Telephone Company has filed articles of incorporation. Capital, $1,065.

NEODESHA, Kas.—Farmers living south of this place have organized the Verdigris Valley Telephone Company.

OKLAHOMA CITY, Okla.—The New Era Telephone Company has filed articles of incorporation. Capital, $20,000.

FREDERICK, Okla.—The Tillman County Telephone Company has filed articles of incorporation. Capital, $20,000.

BLOUNTSVILLE, Ala.—The Blount County Telephone Company has filed articles of incorporation. Capital $6,000.

COLBY, Kas.— The Halford & Colby Mutual Telephone Company has been organized, with headquarters at this point.

PATTONSBURG, Mo.—The Pattonsburg Home Telephone Company has been incorporated with a capital of $25,000.

GRAND JUNCTION, Iowa.—The Mutual Telephone Company has been organized here to build country telephone lines.

BLUE GROVE, Tex.—The Blue Grove Independent Telephone Company has filed articles of incorporation. Capital $2,400.

HYDRO, Okla.—The Mound View Telephone Company has been organized by W. H. Dooley and others. Capital, $2,000.

CHAMBERS, Neb.—The Southfork Independent Telephone Company has been formed here, with J. D. Grimes as president.

COUNCIL HILL, I. T.—The Council Hill Telephone Company has been incorporated by local enterprise. Capital, $2,500.

UNION MILLS, Ind.—The farmers of this neighborhood, headed by F. B. LeSourd, have organized a telephone company.

CARLYLE, Kas.—A rural telephone company has been organized by W. F. Woods and other residents living east of here.

MINEOLA, Neb.—The Mineola Telephone Company has been incorporated by Frank Oberle and others, with a capital of $5,000.

COLUMBUS GROVE, Ohio.—The Columbus Grove Mutual Telephone Company has been incorporated by L. B. Good and others.

CLIFTON SPRINGS, N. Y.—The Rural Telephone Company has been organized here by L. P. Conley and others. Capital, $4,000.

MAYWOOD, Neb.—The Maywood Quick Telephone Company has been incorporated by L. C. Nolan and others. Capital, $2,500.

SMARTVILLE, Neb.—George Sandusky and others have incorporated the Johnson Telephone Company with a capital of $3,500.

ROSENDALE, Wis.—The Rosendale Telephone Company has been incorporated by F. I. Pinch and others, with a capital of $5,000.

MT. VERNON, Mo.—The Mt. Vernon Mutual Telephone Company has been organized by Otis Smith, D. L. Tibbets and A. P. Morgan.

MEMPHIS, Mich.—A telephone exchange has been established here by F. S. Church. Service was started with forty-five subscribers.

HOLSTEIN, Iowa.—The Advance Rural Telephone Company has been incorporated by W. F. Hutton and others. Capital, $25,000.

HOBART, Okla.—The Big Elk Valley Telephone Company has been incorporated here by G. B. Izor and others. Capital, $25,000.

PLEASANT HILL, Ill.—The Farmers' Mutual Telephone Company of Pike county has been incorporated here with a capital of $2,500.

JACKSON, Mich.—The Farmers' Mutual Telephone Company has been incorporated to operate lines in the Sandstone neighborhood.

SEGUIN, Tex.—The Mill Creek Telephone Company has been organized by H. C. Buhler and other farmers living east of this place.

SCHOHARIE, N. Y.—The Schoharie Valley Telephone Company has been incorporated by John Sickles and others. Capital, $2,000.

DEXTER, Iowa.—The Mosher Mutual Telephone Company has been incorporated here by G. E. Sellers and others. Capital, $5,000.

LIBERTY, Ky.—The Hustonville & Liberty Telephone Company has been incorporated by Humphrey & Young, with a capital of $750.

CASS CITY, Mich.—The Cass City Telephone Company has been incorporated by J. C. Corkin, E. H. Bradfield and others. Capital, $5,000.

MARSHALL, Ill.—The People's Mutual Telephone Company has been incorporated by James Davison, John Welsh and others. Capital, $5,000.

ROBINSON, Ill.—The Southeastern Long Distance Telephone and Telegraph Company has filed articles of incorporation. Capital, $2,500.

HILLSDALE, Wis.—The Hillsdale Western Telephone Company has been incorporated by W. M. Stephenson and others. Capital, $2,500.

CRAWFORD, Tex.—The Crawford Telegraph and Telephone Company has been incorporated by W. D. Sutton and others. Capital, $6,000.

BRANSFORD, Tex.—The Bransford Independent Telephone Company has been organized and already started upon construction work.

MADISON, Minn.—The stockholders of the Madison Telephone Company have voted to incorporate, with a capital stock issue of $50,000.

FARIBAULT, Minn.—The Fox Lake Telephone Company has been organized by C. L. Blancher and others. Construction will be begun at once.

LYONS, Ind.—The Lyons Co-operative Telephone Company has been incorporated by John Davidson and others with a capital of $10,000.

FAIRMONT, Minn.—A new farmer line has been organized in this vicinity by Fred H. Reinke, president, and G. C. Koch, secretary and treasurer.

NEILLSVILLE, Wis.—The Lynn Telephone Company has been organized to operate telephone lines in the town of Lynn, Clark county. Capital, $900.

PARAGOULD, Ark.—A company is being formed here to build telephone lines to Marmaduke, Rector, Greenway, Piggott and the surrounding country.

CHURCH'S FERRY, N. D.—The Normania Telephone Company has been organized here by A. J. Kirkeide and other farmers living south of here.

EVANSVILLE, Ind.—Henry Feldhaus and others have incorporated the Perry Hill Telephone Company to operate in Perry township. Capital, $1,000.

SCOTTSVILLE, Ky.—The Scottsville Telephone Company has been incorporated. Capital, $25,000. D. A. Reynolds is the prime mover in the enterprise.

GENEVA, Kas.—A telephone company has been organized here by J. H. Frantz and Fred Childs. Construction work is said to be already under way.

MADISON LAKE, Minn.—The Lakeview Telephone Company has been organized by farmers living near here. President, W. Tarno; secretary, H. A. Silkey.

CRESTED BUTTE, Colo.—The Crested Butte Telephone Company has been incorporated. Capital, $10,000. Object, to build a local exchange and country lines.

TOLNA, N. D.—The Wolfe Telephone Company has been incorporated by F. M. Wolfe and others. Object, the building of rural and toll lines. Capital, $10,000.

BELVIDERE, Neb.—The Farmers' Mutual Telephone Company of Thayer County has been incorporated by A. B. Thompson and Frank Kuhnel, with a capital of $4,000.

DUBLIN, Tex.—The Farmers' Rural Telephone Company has been incorporated for the purpose of building lines in all parts of Erath county. Capital, $20,000.

AURORA, Neb.—The Farmers' Telephone Company has filed articles of incorporation. Capital $10,000. Lines will be built in Hamilton, York and Fillmore counties.

MAYWOOD, Neb.—The Maywood & Carric Telephone Company has filed articles of incorporation. Capital, $1,500. President, D. Teeters; secretary, F. P. Vierson.

INDIANAPOLIS, Ind.—The secretary of state has licensed the Darmstadt Telephone Company, to operate in Vanderburg, Gibson and Warwick counties. Capital, $1,000.

HARRISVILLE, Pa.—The Harrisville Telephone Company, capital $5,000, has been incorporated for the purpose of building lines in Butler, Venango and Mercer counties.

OVIATT, Mich.—The Lake Ann and Oviatt Telephone Company has been organized here. Ten miles of line will be built at once and a switchboard installed at Oviatt.

SMARTVILLE, Neb.—The Mutual Telephone Company has been transformed into a stock company with $25,000 capital. Father Charles Cwiklinski was elected president.

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SUNNYSIDE, Wash.—The Yakima Valley Telephone Company has filed articles of incorporation. Capital $25,000. The company has taken over a number of farmer lines.

DUNDAS, Minn.—The Dundas Rural Telephone Company has been incorporated with E. T. Mackey as president and A. G. Chase as secretary and treasurer. Capital, $10,000.

BENTONVILLE, Ark.—A farmers' rural telephone company has been organized for Benton county, including the towns of Rogers, Bentonville, Avoca, Pea Ridge and Garfield.

VAN BUREN, Ark.—The Farmers' Union of Crawford county is forming a stock company, with a capital of $20,000, for the purpose of establishing a system of rural telephone lines.

ALBANY, N. Y.—The Aero T. & T. Company, which expects to build lines on Long Island and the suburbs of New York city, has filed articles of incorporation. Capital, $50,000.

HAMLIN, Tex.—A charter has been granted to the Orient Santa Fe Telephone Company, which will build lines in Nolan, Fisher, Jones, Haskell and other counties. Capital, $25,000.

HAVERHILL, Mass.—Nathaniel N. Spofford, who was manager of the People's Telephone Company until its absorption by the Bell, is trying to organize an independent company.

AUSTIN, Tex.—The Wedham-Brenham Telephone Company has been granted a charter by the secretary of state. Capital, $5,000. Principal place of business, Wedham, Austin county.

FAIRVIEW, Okla.—The Dane and Fairview Telephone Company has filed articles of incorporation. Capital, $15,000. A. A. Crumb, of Dane, and Bruce Lovell, of Fairview, are directors.

PARIS, Ark.—The Greasy Valley Telephone Company has been organized here, with W. H. Brown as president. The company will build and operate a line from the Valley to Paris.

LAPORTE CITY, Iowa.—The Laporte City Farmers' Mutual Telephone Company has filed articles of incorporation. Capital, $24,000. The object is to secure franchises in cities and towns and to conduct a general telephone business. O. A. Wallace is president.

SILVERLAKE, Ind.—The Farmers' Co-operative Telephone Company has been organized here. Object, to build telephone lines in Fulton, Marshall, Miami, Wabash and Whitley counties. Capital, $10,000.

WILMOT, Ind.—The Wilmot Telephone Company has been incorporated. Capital, $20,000. J. E. Armstrong is heavily interested. The company will operate lines in Kosciusko, Whitley and Noble counties.

ELM GROVE, W. Va.—The Farmers' Mutual Telephone Company has been organized by J. R. McNinh and other residents in the neighborhood of West Alexander. The company will start with 100 subscribers.

WASHINGTON, Pa.—The State Mutual T. &. T. Company, W. C. Handlan, of Wheeling, W. Va., president, has filed articles of incorporation. Exchanges will be installed at Washington and in other Pennsylvania towns.

SOUTHWEST HARBOR, Maine.—The Island Telephone Company has applied to the state legislature for a charter. Capital, $10,000. The company proposes to build lines in Southwest Harbor, Tremont and Cranberry Isles.

COLORADO SPRINGS, Colo.—The Garden City Telephone, Light & Manufacturing Company has been incorporated for the purpose of furnishing telephone and electric light service to the town of Garden City, Kas. Capital, $150,000.

GOLDFIELD, Nev.—The Nevada-California T. & T. Company, which is now doing a telegraph business exclusively, contemplates the installation of telephones at an early day. The line runs from Amargosa, Nev., to Greenwater, Cal.

OMAHA, Neb.—The Independent Telephone Company has filed articles of incorporation with the county clerk. Capital, $5,000,000, of which $3,500,000 is preferred stock. Power is given to issue bonds to the amount of $3,330,000.

PORT WASHINGTON, Wis.—The Port Washington Telephone Company has been organized here for the purpose of building a town exchange and rural lines. President, J. E. Uselding; secretary, A. H. Kuhl; general manager, W. B. Krause.

LONG PRAIRIE, Minn.—Farmers living in the southern part of Todd county have organized the Sauk Valley Telephone Company. An exchange will be established at Sauk Center. A. H. Hendrickson is the prime mover in the enterprise.

NEW CASTLE, Pa.—Over $55,000 has been subscribed for the New Home Telephone Company. As soon as $45,000 more is secured an engineer will be employed and active construction work begun. Scott Paisley is secretary of the new company.

CHICAGO, Ill.—The Chicago & Western Telephone Company has been licensed by the secretary of state. Capital, $100,000; object, to manufacture and operate telephones. This is the company which will take over the telephone franchise of the Illinois Tunnel Company.

HARTFORD, Conn.—The Connecticut Home Telephone Company has applied to the state legislature for a charter to operate telephone lines throughout the state. Ex-Congressman Lewis Sperry represents the incorporators. The capital of the company is to be $100,000, which may be increased to $500,000.

RENO, Nev.—Capt. J. B. Menardi, president of the Reno Stock and Bond Exchange, announces that the brokers of the city will build an independent telegraph line from Reno to San Francisco and from Reno to Goldfield as soon as the snow is off the mountains. Later on telephone service will be installed.

CHICAGO, Ill.—The Chicago, St. Louis & Western Long Distance Telephone Company, the Chicago, Milwaukee & Northern Long Distance Telephone Company and the Chicago, Indiana & Eastern Long Distance Telephone Company have been licensed by the secretary of state. Each of the companies has a capital of $5,000. They were incorporated by Poppenhusen & McNabb, Chicago attorneys.

TRANSFERS AND FRANCHISES.

MILTON, N. D.—The local telephone exchange has been sold to Frank Delling.

HARTVILLE, Mo.—W. C. Johnson has succeeded to the telephone business of Prophet & Johnson.

WESTPLAINS, Mo.—The Westplains telephone exchange has been sold to W. L. Bell, of Kansas City.

METZ, Mo.—M. A. Wolfe has sold the Metz telephone exchange to C. F. Manifold, of Strasburg.

PORT LAVACA, TEXAS.—W. C. Best has purchased the stock of the local telephone exchange for $7,000.

MORAN, KAS.—The local telephone exchange has been purchased by Epperson Brothers, of Iola, Kas.

WAVERLY, ILL.—The city council has granted a fifteen-year franchise to the Waverly Telephone Company.

NEW RICHLAND, MINN.—The New Richland Telephone Company has recently sold $5,000 of additional stock.

HAVANA, ARK.—J. E. Mitchell has completed a telephone line from this place to Riley and Walnut Tree.

POTTER, KAS.—The telephone plant here has been bought by J. W. Kemler and J. R. Grisham, of Basehor, Kas.

BROOKVILLE, IND.—The city council has granted a franchise to the Brookville and St. Peters Telephone Company.

EMERYVILLE, CAL.—The Home Telephone Company has made application to the town council for a local franchise.

GRANGER, IOWA.—The Farmers' Telephone Company, Dallas Center, has been granted a franchise by the voters of this place.

O'FALLON, ILL.—A franchise has been granted by the town board to the Newark Farmers' and Merchants' Telephone Company.

PALMYRA, Mo.—William Lind, of Quincy, Ill., has sold the Palmyra telephone exchange to Judge George W. Pine and L. E. Frazer.

NORTHFIELD, MINN.—By a vote of 223 to 78 the citizens of Northfield rejected a proposition to construct a municipal telephone system.

GOLDSMITH, IND.—Noah Linthicum, for some time owner of the local telephone plant, has sold the same to Fay Hulick, of Tipton, Ind.

PLAINVIEW, MINN.—The Plainview exchange and farmer lines connected with it have been bought by the Greenwood Telephone Company, Wabasha, Minn.

PANA, ILL.—The Christian County Telephone Company has bought the property and exchanges of the Edinburg (Ill.) Telephone Company. Consideration, $25,000.

BARBOURVILLE, KY.—The promoters of the Cumberland River Telephone Company, a local organization, have applied to the Williamsburg city council for a franchise.

NORTHFIELD, MINN.—The recently incorporated Northfield Telephone Company, of which William Ebel is president, has petitioned the city council for a franchise.

MADISON, MINN.—The Madison telephone exchange has been sold to J. R. Swann and others, who will incorporate the company and sell stock to the amount of $15,000.

HUDSON, MICH.—The town council has granted a franchise to the Southern Michigan Telephone Company. An exchange is to be in operation within one year.

PROVO, UTAH.—The board of county commissioners has granted a toll line franchise to the Southern Utah Independent Telephone Company, hereafter to be incorporated.

SHERMAN, TEXAS.—The property of the Phoenix Telephone Company has been sold to H. D. Keith and Captain W. C. Tyrrell, of Beaumont, Texas, for the sum of $4,500.

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ASOTIN, WASH.—The telephone exchange here has been sold to N. J. Cunningham, of Clarkston, Wash., who will install a new switchboard and otherwise improve the property.

LEAVENWORTH, KAS.—Dr. C. F. Sager has bought the exchanges at Potter and Easton and the rural lines connected with them and established free connection with Leavenworth.

WARSAW, N. Y.—The Warsaw Home Telephone Company has bought the business and plant of the Wyoming Telephone Company, with exchanges at Wyoming, Dale and Lindon.

MILES, WASH.—The telephone line between Miles and Lott has been bought by A. B. Lewis and C. L. Tillion, and will hereafter be known as the Spokane River Telephone Company.

PULASKI, TENN.—The city council has granted a long distance franchise to the Independent Long Distance T. & T. Company. The council refused to grant a local franchise to the company.

SULPHUR, I. T.—The Sulphur telephone system has been purchased by O. O. Spencer and others, of Wislon, Kas., for $15,000. The plant will be remodeled and the service extended and improved.

TERRE HAUTE, IND.—The county commissioners have granted a franchise to a number of Harrison township farmers for a telephone system to connect with the wires of the Citizens' Telephone Company.

DEARBORN, MO.—The Dearborn and Edgerton telephone exchanges have been sold by the Platte County Telephone Company to a Mr. Jeffries, of St. Joseph. William Tays will be the local manager.

ALBANY, N. Y.—The United Message Company has acquired the stock of the Exchange Construction Company, of Albany, thereby gaining control of independent telephone lines in Clinton, Franklin and St. Lawrence counties.

ST. JOHNS, ORE.—The Home Telephone Company has been granted a franchise by the city council for a term of twenty-five years. The company is to pay to the city $5,000, at the rate of $200 annually after the plant has been installed.

GARDEN CITY, KAS.—The Garden City telephone system and electric light plant has been acquired by the Garden City Telephone, Lighting and Manufacturing Company, a Colorado Springs corporation. E. E. Wade will be general manager.

QUINCY, ILL.—The Adams County Telephone Company has absorbed the telephone lines in Ellington township, which heretofore were connected with the Central Union. The Ellington people accepted Home stock in payment for their lines.

PONTIAC, MICH.—The Oakland County Telephone Company has been reorganized and the capital increased to $500,000. The entire system will be reconstructed and extended. A. C. Himebaugh, of Burr Oak, is president of the new company.

ALAMOGORDA, N. M.—The Penasco Telephone Company has been granted a fifty-year franchise to erect and operate telephone lines in Otero county. J. C. Gage, Penasco, N. M., is president, and Harry W. Hamilton, of the same place, secretary.

CLEARFIELD, PA.—The property of the Huntingdon & Clearfield Telephone Company, the Indiana Telephone Company and the Cambria County T. & T. Co. has been transferred to the American Union Telephone Company, with headquarters at Harrisburg, Pa.

CLIFTON, TENN.—The W. C. Cole Telephone Company has secured control of the Consolidated T. & T. Company with exchanges at Clifton, Savannah and Waynesboro. W. C. Cole was elected president of the merged company and will remove to Clifton from Perryville, his former home.

INCREASE OF CAPITAL STOCK.

SCHOOLCRAFT, MICH.—The Citizens' Telephone Company has increased its capital stock from $5,000 to $8,000.

WOODSFIELD, OHIO.—The Woodsfield Telephone Company has increased its capital stock from $25,000 to $50,000.

NEW CASTLE, OHIO.—The New Castle Telephone Company has increased its capital stock from $5,000 to $10,000.

MARKLE, IND.—The Markle Telephone Company has given notice of an increase of capital stock from $6,000 to $22,000.

UNION GROVE, WIS.—The Union Grove Telephone Company has filed a certificate of increase of capital stock from $5,000 to $15,000.

CARTHAGE, ILL.—The Mississippi Valley Telephone Company has filed a certificate of increase of capital stock from $50,000 to $100,000.

ATWOOD, ILL.—The Atwood Mutual Telephone Company has increased its capital from $9,000 to $12,000. A number of new lines will be built.

COLUMBUS, OHIO.—The Germantown Independent Telephone Company of Butler county has increased its capital stock from $10,000 to $20,000.

CHELSEA, VT.—The Orange County Telephone Company has increased its capital stock from $25,000 to $35,000 and will build a number of new trunk lines.

BURR OAK, MICH.—The Southern Michigan Telephone Company has increased its capital stock from $300,000 to $1,000,000. A. C. Himebaugh has been re-elected president.

CARMI, ILL.—The stockholders of the White County Telephone Company have decided to improve the system and will increase the capital stock from $9,000 to $25,000.

SALT LAKE CITY, UTAH.—The Elmore County Telephone Company has changed its name to Utah, Nevada & Idaho Telephone Company and increased its capital to $200,000.

ARCADIA, WIS.—The Western Wisconsin Telephone Company has increased its capital stock from $65,000 to $75,000. The money will be used for extensions and improvements.

MASCOUTAH, ILL.—The Looking Glass Prairie Telephone Company has increased its capital from $10,000 to $20,000. The company's system will be extended and the service improved.

COLUMBUS, OHIO.—Articles of increase of capital stock from $4,000 to $8,000 have been filed with the secretary of state by the Henrietta Rural Telephone Company of Lorain county.

CLEVELAND, TEXAS.—The Cleveland Telephone Company has increased its capital from $1,000 to $2,000. The money will be used to build a line from Cleveland to Tricket, Hardin county.

YORK, PA.—The York Telephone Company will increase its bonded indebtedness from $200,000 to $1,000,000 to enable it to build a first-class exchange and to take over a number of small independent lines.

EAU CLAIRE, WIS.—The Luddington Telephone Company has filed an amendment with the secretary of state increasing its capital from $3,000 to $15,000. The money will be used in extending the system.

OCONOMOWOC, WIS.—The Badger Telephone Company has voted to increase its capital from $5,000 to $25,000. General Manager H. E. Rosenow states that the money will be used in extending the company's system. A new line is now being built to Ashippun.

NEW YORK CITY.—The Empire City Subway Company, Ltd., has voted to increase its capital stock from $3,500,000 to $50,000,000. The money is to be used for the building of telephone and telegraph conduits. The Subway company is controlled by the New York Telephone Company.

BOISE IDAHO.—The Independent Long Distance Company has increased its capital from $500,000 to $1,000,000. General Manager Beggs has recently visited the East to order material for improvements and extensions to be made during the summer. Franchises have been granted to the company to put in underground systems at Nampa and Nyassa, Ore.

MOBILE, ALA.—The board of directors of the Home Telephone Company has decided to increase the company's preferred stock from $20,000 to $150,000 and the common stock from $350,000 to $500,000. The following officers were elected for the current year: President, W. C. Polk, Birmingham; vice-president and general manager, W. H. Bryant, Mobile; secretary, R. L. Douglass, Mobile.

EXTENSIONS AND IMPROVEMENTS.

AMBERG, WIS.—The Amberg Telephone Company will build a toll line from Pembine to Niagara.

OSKALOOSA, IOWA.—The Home Telephone Company has moved into new and modern quarters.

WAUSAU, WIS.—The Wausau Telephone Company will do considerable cable work in the near future.

CONWAY, ARK.—The Conway Telephone Company has just installed a new switchboard in its office here.

EDINBURG, N. D.—Two lines to the west will be built in the spring by the Edinburg Telephone Company.

BEETOWN, WIS.—It is likely that the local telephone company will install a new switchboard in the spring.

STERLING, NEB.—A central office will be established here by the Johnson County Home Telephone Company.

THOMAS, W. VA.—The Davis Coal & Coke Co. will improve its telephone system by installing a new switchboard.

MONROE, WIS.—The Monroe County Telephone Company is planning to build a number of extensions in the spring.

LEONARDSVILLE, N. Y.—The Leonardsville Telephone Company will extend its lines to Bridgewater in the spring.

CASCO, ILL.—The Casco and Brussels Telephone Company will construct several substantial extensions in the spring.

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MOORES HILL, IND.—The Moores Hill Telephone Company is making preparations for the installation of a new exchange.

LOSTANT, ILL.—The Farmers' Mutual Telephone Company is building lines to Lonica, McNabb, Wenona and other points.

BOWLING GREEN, MO.—The Pike County Independent Telephone Company will install an independent switchboard at this place.

NEW ULM, MINN.—The New Ulm Rural Telephone Company will establish a local exchange at Courtland in the near future.

LORAIN, OHIO.—The Black River Telephone Company will add 1,000 lines to its switchboard and may erect an exchange building.

SANDUSKY, OHIO.—The board of directors of the Sandusky Telephone Company has authorized improvements to the extent of $15,000.

IRONTON, OHIO.—The Home Telephone Company has recently built a line to Marion, to take better care of its country subscribers.

HALLOCK, MINN.—The Kittson Telephone Company will rebuild its Hallock exchange with cable as soon as the weather may permit.

THOMAS, W. VA.—The Davis Coal & Coke Company is preparing to improve its telephone department by installing a new switchboard.

SUTTONS BAY, MICH.—The East Leland Telephone Company will extend its lines to Provemont, Leland, Omena and Northport in the spring.

GLIDDEN, IOWA.—The Glidden Telephone Company has recently built toll lines to Coon Rapids and Lidderdale, a distance of twenty-four miles.

DODGE CITY, KAS.—Construction work is to be begun very soon by the Arkansas Valley Telephone Company, a new $60,000 long distance corporation.

DURAND, WIS.—The Burnside telephone exchange is issuing more stock and proposes to extend its lines from Nelson to Durand as fast as possible.

ALBANY, N. Y.—The Home Telephone Company is laying a new set of underground cables and will make extensive improvements in its central office.

KINCAID, KAS.—The Eastern Kansas Telephone Company will install a new switchboard in its main office. Manager R. L. Fraser has charge of the work.

KEOKUK, IOWA.—The Mississippi Valley Telephone Company will erect a handsome exchange building this spring on a lot opposite the Grand Opera House on Blondeau street.

COLUMBUS, OHIO.—The Citizens' Telephone Company is building a new sub-station at the corner of Oak street and Miller avenue at a cost of $4,000.

MERRILL, WIS.—The Merrill Telephone Company will make many important improvements during the coming season and may install an automatic switchboard.

HILLSBORO, ILL.—The Montgomery County Telephone Company has just finished putting in an underground conduit where its wires cross the main business street.

OWENTON, KY.—James A. Johnson is building a telephone line to Monterey, by way of Cedar Hill. When completed, it will be one of the best lines in Owen county.

BRONSON, IOWA.—At their annual meeting the stockholders of the Bronson Telephone Company voted $1,100 for the equipment of a central office some time next summer.

SAN ANGELO, TEXAS.—The San Angelo Telephone Company is preparing to improve its system by the addition of cables and the installation of a central energy system.

BRYAN, OHIO.—The Bryan Telephone Company will connect its system with the exchange at Ney which has recently come into its possession. Other extensions are planned.

MOAB, UTAH.—Construction work has been begun by the Blue Mountain Telephone & Electric Company, recently incorporated by local capitalists with a capital of $10,000.

SEWARD, KAS.—The Seward Farmers' Telephone Company has commenced construction work. President, Charles A. Batman; secretary, E. W. Dewey; treasurer, A. J. Seass.

ABINGDON, ILL.—The Mutual Union Telephone Company, which recently increased its capitol stock to $5,000, will install a new switchboard and build several miles of cable line.

WAUKON, IOWA.—The Standard Telephone Company is about to rebuild its exchange at Decorah. A new switchboard will be installed and cable substituted for the open wire now in use.

PATASKALA, OHIO.—The Pataskala Mutual Telephone Company has decided to purchase and install a switchboard immediately upon being granted a franchise by the village council.

MOBERLY, MO.—The Moberly Telephone Company has bought 10,000 feet of cable, at a cost of $4,000, which will be strung early in the spring. Other improvements are also under way.

KEARNEY, NEB.—The Buffalo County Telephone Company is now out of debt and prepared to make improvements and extensions. H. G. Reiter was re-elected president and manager.

COSHOCTON, OHIO.—The Citizens' Telephone Company will soon have cables strung through every principal alley in town. Fully $20,000 will be spent by the company for improvements.

SIOUX CITY, IOWA.—The Sioux City Telephone Company, through General Manager Howard S. Baker, has announced that it will spend $75,000 during 1907 for improvements and extensions.

HARRISBURG, PA.—The American Union T. & T. Co. has started construction work on its new long distance line between Pittsburg and Philadelphia. Over $350,000 worth of material has been contracted for.

BORDEN, IND.—The Farmers' Union Telephone Company will build two new lines this spring, one from near Greenville and one from the head of Indiana Creek. John C. Scott is president and secretary of the company.

QUINCY, ILL.—The Mississippi Valley Telephone Company, which now extends as far south as Gregory, Iowa, will build a long distance line into Quincy. The main line will run from Burlington, Iowa, to Hannibal, Mo.

BELLEFONTAINE, OHIO.—The United Telephone Company has decided to make many important improvements during the coming season. A gain of 521 telephones was made in 1906. W. W. Fisher was re-elected president.

GOLDFIELD, NEV.—Dorr, McDonald & Co., who now operate a telegraph line from Amargosa, Nev., to Greenwater, Cal., under the name of the Nevada-California T. & T. Co., will establish telephone lines in the near future.

RIDGEWAY, PA.—The Commercial Union Telephone Company is constructing a number of new lines in the neighborhood of Port Alleghany and making connections with the lines of other companies. R. A. Barnett is manager of the company.

KENTON, OHIO.—The Kenton Telephone Company will install a new switchboard in its Kenton exchange and string many miles of new cable. The improvements contemplated will entail an outlay of $20,000. The new equipment will be for 4,000 subscribers.

ZELMA, OKLA.—The Beaver & Cimmaron Valley Telephone Company, a new company, has built fifty miles of line between Englewood, Kas., and Beaver. Another line is now being built, twenty-four miles in length. A. J. Sands, of Zelma, is president of the company.

FAIRBURY, NEB.—The entire plant and all the toll lines of the Fairbury Telephone Company have been virtually rebuilt during the past few years out of the company's net earnings. The company now has nearly 1,000 subscribers as against 501 on November 1, 1904.

ROCKFORD, ILL.—The Home Telephone Company, of which R. H. Gibboney is superintendent and manager, has made provisions for important extensions during the spring to meet the demands for its service. The popularity of independent methods is growing all the time.

SHEBOYGAN, WIS.—The Citizens' Telephone Company is about to install a common battery switchboard and other new apparatus. On February 1 the company advanced its rates from $1.50 to $2.50 per month for residences and from $2.50 to $3.50 per month for business service.

SIOUX CITY, IOWA.—More than $100,000 will be spent by the State Telephone Company next summer in building toll lines in Iowa, South Dakota, Minnesota and Nebraska. The company now has over 3,000 miles of toll lines in operation. C. H. Smith is secretary and general manager.

ROCKWELL CITY, IOWA.—Many improvements have been made during the past year by the Central Mutual Telephone Company. Lohrville has been rebuilt with an entirely new cable plant and during the coming season Pomeroy will be cabled. The company's new exchange building at Rockwell City is nearing completion.

MISCELLANEOUS INFORMATION.

CLINTON, ILL.—Miss Nora Grove, aged 19, a telephone operator, was electrocuted while at the switchboard, an electric light wire being blown across the telephone wire.

JANESVILLE, WIS.—The Independent Telephone Association of the First Wisconsin District has elected the following officers: President, H. A. Mohrlenpah, Clinton; secretary and treasurer, F. C. Grant, Janesville.

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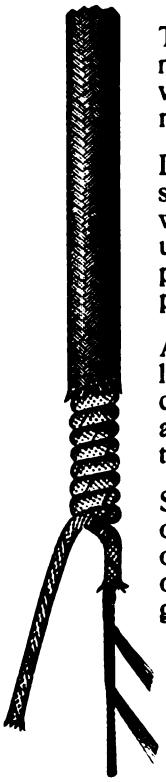

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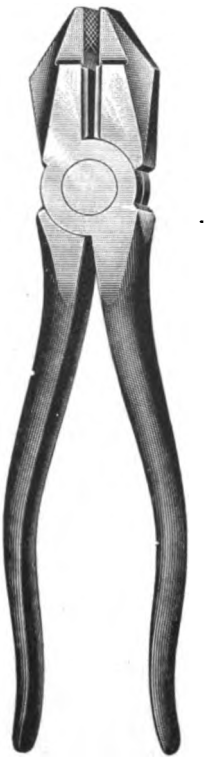

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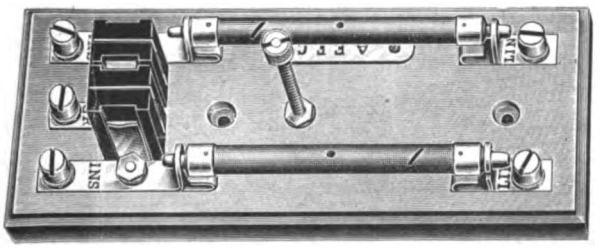

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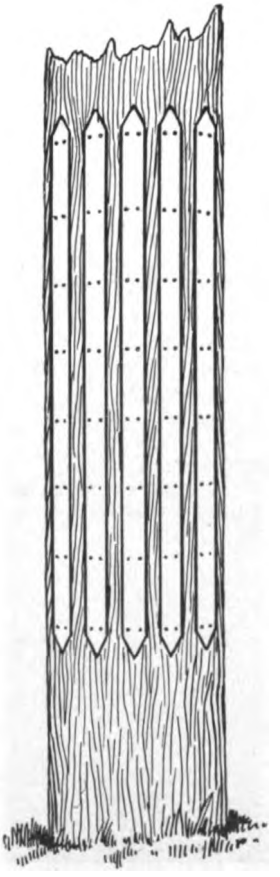

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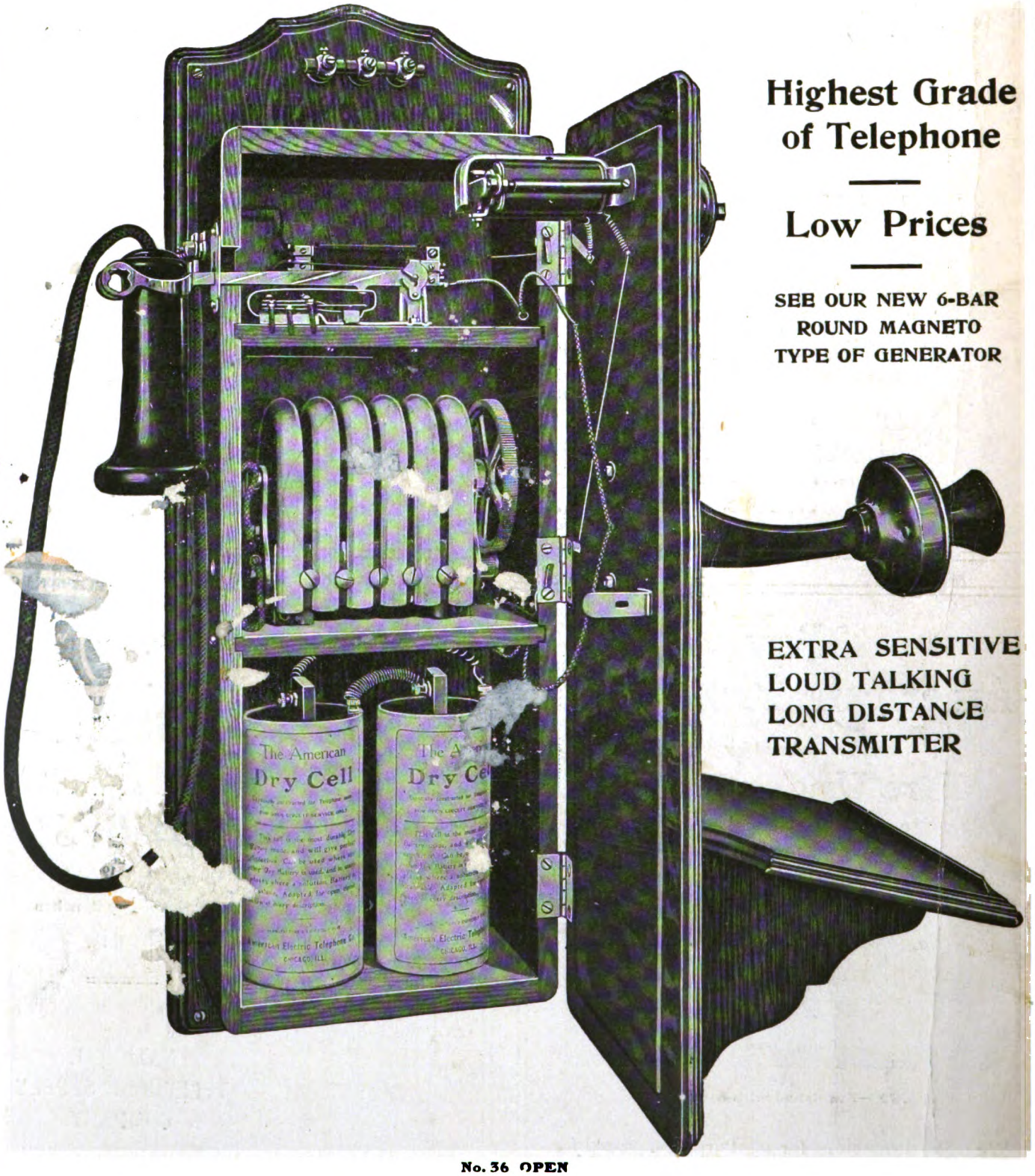

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The Publishers

SOUND WAVES

VOLUME XIII
No. 5

INTERNATIONAL TELEPHONE JOURNAL

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1907

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CHICAGO, APRIL, 1907

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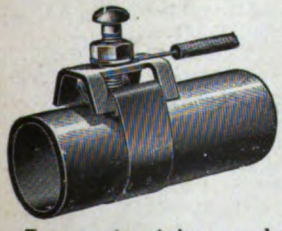

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An Advocate of Independent Telephony

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NOTICE TO ADVERTISERS.

Changes of advertising copy should reach the office of publication not less than ten days in advance of date of issue. New advertisements will be accepted up to within five days of date of issue, but proof of such advertisement can not be shown until the appearance of the edition containing it.

Of this edition of SOUND WAVES, *4,800 copies have been printed. To meet the demands of subscribers, more than 4,300 copies are required—the remaining copies are used in circulation extension.*

CHICAGO, APRIL, 1907.

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A CHANGE OF OWNERSHIP.

THE Electricity Magazine Corporation has been formed to continue the publication of SOUND WAVES and to work out certain ideas that promise to be helpful to Independent telephony. The individuals comprising this new publishing concern have long been similarly identified and interested in the general welfare and uplift of the Independent telephone business.

SOUND WAVES has exerted a vast influence for good in the development of the telephone industry in the past and it has, in the judgment of its publisher, reached that period in its existence when it is peculiarly qualified to assume larger responsibilities. It will continue to adhere strictly to Independent lines, ever championing those matters which suggest greater economies and possibilities in operating and manufacture. Every subdivision of these chief elements will have the most careful and continuous attention.

The publisher will hope to cultivate that close and intimate acquaintance with the subscribers which has prevailed from the publication's earliest inception. Among the assets of the property none have higher value than this pleasant relation. SOUND WAVES is proud of the loyalty of its readers and will strive most earnestly to merit a continuance of their good will and approbation. Sometimes these readers refer to themselves as the "little fellows," but without some of the little fellows there would not be a tremendous lot to the telephone business after all. It is indeed gratifying to know that SOUND WAVES has kept abreast of the times, satisfying the larger interests without neglecting or overlooking the smaller ones. Nothing can give a publisher more encouragement than to find in his daily mail such expressions as this: "I consider SOUND WAVES the best all-round of any of the telephone papers I receive"; or this: "Your SOUND WAVES is O. K., and the best of the seven Independent journals I am taking"; or again: "Accept my congratulations on the very noticeable improvement in your March issue."

We have no exalted opinions to air; no axe to grind. There is too much to do along legitimate channels to leave the beaten path. It is our desire to run our business pretty much in the open, never forgetting, however, that we are masters of our own destiny. We are promoting no enterprise that is half so important as SOUND WAVES. There is no affiliated interest other than Independent telephony from one end of the world to the other. Our creed is loyalty to that one particular industry from the most humble to the most pretentious form. That we have perfect faith in our ability to serve this industry goes without saying, but that we shall be able to manifest this ability will naturally require the continued co-operation of Independents everywhere.

The advertisers we have with us now have been with

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us almost continuously since the publication started. It is obvious that they endorse the high character and buying power of the subscription patronage—one being to the other equally important. It is manifestly necessary for the subscriber to be advised regarding improvements in apparatus and devices. It is just as essential that the advertiser bear in mind that the subscriber looks to his announcements for this helpful information. Sound Waves has grown with the development of the telephone business. It has increased its efficiency as its patrons have increased their properties. Nothing associated with the telephone business began at the top—everybody and everything connected with it started but a little while ago on a comparative level.

There is much competition and we all share in it alike. Without competition there would be monopoly, and it is "monopoly" that gives us reason to exist. The blue bell of the Bell monopoly is the emblem of a common foe. Every element that can be brought to bear against this blue bell; everything that has for its principle to advance the shield of the Independents will have the endorsement of this publication. If we cannot win on such a platform we do not deserve to win.

BEWARE OF THE GHOST.

CHICAGO is a haunted city—electrically speaking. Electric sparks snap mysteriously, ghostly signals flash on telephone switchboards, and all rules regarding electrical instruments are constantly upset. The "haunt" is caused by earth potentials—the charge of electricity which has leaked from the rails and wires of the street car companies. The effect is as though droves of merry-making spooks were sitting on the telephone wires and cables.

In many of the offices of the Chicago Telephone Company the operators have come to distrust the signals which flash before them in the switchboard lamps. Often during the day they find the signals are the erie work of the earth potentials. This means extra-manipulations, delays and vexations. Lights flash when no human hand has called; many times the true signals refuse to go out again when the subscriber has hung up his receiver.

On the subscriber the effect is equally vexatious. Ofttimes a man is "cut off" while telephoning to his wife. He fumes madly and rattles the receiver's arm. As it was the earth's potential which broke the circuit, the chances are that the man's frantic efforts will not signal "central," or, if he gets the operator, he gives her a blast which reacts on her nerves and demoralizes her efficiency of service. Sometimes the vagrant electricit · locks the boxes against nickels, or prevents the return of coins.

The "laying of the ghost" will be possible only when the old rails and ancient equipment of the street car lines are discarded, following the settlement of the traction question, according to electrical experts. They declare that improved street car service will be accompanied by better telephone facilities. The proof of the guilt of the present street car service in hampering telephone operations is in the fact that telephone troubles are most frequent when the street cars are carrying their heaviest loads, and in localities where many trolley and feed wires converge.—*Chicago Daily News.*

At last we have the answer—Chicago telephone service is haunted! How marvelous that we should have the real facts in a situation that daily concerns tens of thousands of patient, liberty-loving citizens, and to realize, too, that these tens of thousands of people who have been deeply and strangely disquieted have been seeking for the solution of the vexed problem for years.

It behooves us, with this startling evidence before us, to be charitable and accept the answer in good faith. With the full knowledge that Chicago telephone service is haunted, Independents will understand that Bell service everywhere is generally victimized by "ghosts." The management of the Bell companies is not to blame for intolerant service; the operators wash their dainty hands of the whole matter; the apparatus cannot be assailed—[illegible]mechanical is perfect. The whole trouble lies with the "spooks" which dally with the circuits.

A certain monetary transaction involving the attempted expenditure of a nickel has precipitated a controversy between the subscriber and the operator. It is the "spook" that is listening in, exulting because the subscriber is frantic. Because of her careful training, the operator usually remains cool and tranquil. Of course the nickel was dropped, but the ghost got it! We shall learn in due course that the same identical nickel was used later to make even change in the payment of a stock dividend.

We are expecting, too, that from some purely accidental source we shall some day learn that these "goblins" are on the Bell pay-rolls. Nearly everything that clouds itself in mystery in the beginning has a simple explanation behind it. The magician who plucks coins from the coat lapels of his guests seldom makes satisfactory demonstration if he is first relieved of his pieces of silver. The Bell company is behind the ghosts and the earth potentials and the car tracks.

Nearly everybody identified with Independent telephony sometimes has occasion to visit Chicago. Most of these visitors are familiar with both the traction and telephone service. They know, too, that both services are execrable. With careful consideration we note the inducement held out, "according to electrical experts," that there can be no change in the telephone service until the traction facilities are improved. Grand! We shall next turn to the street railway journals expecting to see in retaliation that the traction companies will improve the service when the telephone company condescends to do likewise.

We have charged many ignoble acts to the Bell press bureau, but we must now reluctantly concede that it is clever—marvelously clever. It promises to give better telephone service when the transportation problem is rendered less difficult. Shall we say that the Bell company is praying for a Harriman, because a Morgan has failed to measure up to the full requirement? The thought is foreign to the ghost. Since the advent of the ghost in the telephone business we will doubtless hear that it is required to serve a hard taskmaster, especially in those few cities still remaining in the grasp of the Bell company.

Beware of the ghost!

CANADA'S AWAKENING.

THE Independent telephone campaign that had its inception in the province of Manitoba has inspired other provinces to follow the example and the movement is extending to all parts of the dominion of Canada. The long continued oppression of the Bell Telephone Company has thoroughly aroused the people, and in all of their gatherings they emphatically express themselves against the monopoly. The demand for municipal service in Manitoba is universal. Saskatchewan, the province further west, is engaged in a bitter war against the Bell Company. British Columbia has joined in the crusade for better telephone service. Alberta is extremely active. At Barrie, Ontario, the residents are highly incensed at the wretched service and excessive charges of the trust company, and at a recent town meeting urged the council to pass a resolution asking the government to construct long distance telephone lines.

In this issue of Sound Waves considerable space is devoted to Canadian conditions, from which we gather that this vigorous development will have a large and beneficial influence over the manufacturing interests of the United States. There are no Independent telephone

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manufacturing establishments in Canada. Several of the concerns now advertising in this publication have established branches on Canadian soil, and we believe it is the intention of some of these concerns to manufacture apparatus across the border. Owing to the favorable influence this publication had in the Manitoba telephone campaign, it has a large following among the representatives of the new industry in that province. We have the co-operation of Mr. F. Dagger, telephone expert for the province of Manitoba, whose department in this publication is an accurate index to the progress of the new northwest.

It would seem that the findings of the select committee on telephone systems appointed by the House of Commons in 1905, and which made such an exhaustive investigation of Independent telephony in the United States, is bearing fruit. Following the report of this select committee, the matter of telephone competition rested temporarily, and it was not until an educational campaign was instituted in the province of Manitoba that the people became thoroughly aroused as to the existing conditions. Right now, the movement is sweeping from one end of the country to the other. Canada is to be congratulated on the position it has taken to overcome the intolerable telephone service that has been imposed upon it for so many years.

MORE ANENT THE BELL LOAN.

EVERYBODY interested in Independent telephony is familiar with the fact that the American Telephone & Telegraph Company has been forced to negotiate a $40,000,000 loan through its financial agent, J. P. Morgan & Co., and that this gigantic Wall street concern has made a dismal failure in fulfilling its part of the contract. From recent developments, however, it would seem that there are more ways than one to peel a lemon, for a bill has been introduced in the Massachusetts legislature which authorizes the savings banks of that state to invest in the bonds of railroads, street railways, *telephone,* gas or electric light securities. The power is vested in a board composed of the bank commissioner, the state treasurer and commissioner of corporations. This bill is the particular pet of United States Senator W. M. Crane, who is a director of the American Telephone & Telegraph Company. In this bill may be seen the fine Italian hand of the "eminents" who have for years been using savings bank deposits in quite another way to promote its private enterprises.

The forty million four per cent convertibles which the Bell Company is trying to unload on the public have met a frosty reception from investors everywhere. At present the statutes governing savings banks do not permit investment in telephone securities. The only time the big bond issue has been heard of since February 5 was on the Boston curb, and it must have been very humiliating to the Bell Company to find its securities seeking such a level. It will be remembered that Kuhn, Loeb & Co., and Kidder, Peabody & Co. were interested with J. P. Morgan & Co. in this big bond deal, and it is only natural to infer that the names of these firms, and the financial strength which all the world knows they have, would have been sufficient to induce investors to take on a little more of the American Telephone & Telegraph Company's "inflation" and absorb it. But even a sponge has its limitations!

Nearly everything extraordinary has been resorted to regarding this particular bond issue. The price has been scaled down from 94½ to 92, but this did not bring takers. The Bell Company has endeavored to clothe the unfavorable reception with a number of its pet phrases, but in all of them there is restrained optimism. Someone has said that the bonds were meeting a reception equal to a consignment of ice cream in the frigid zone.

It is truly pathetic to find the erstwhile great Bell Telephone Company peddling its securities on the curb. Sensible observers will surely understand by these things that Independent telephony is making serious trouble for its big competitor. It is not uninteresting to know that $44,000 worth of this bond issue was sold on the Boston curb February 8 at 91½, one point below the price asked.

NEW TELEPHONE PAPERS.

THE name chosen by Paul Latzke for his new weekly paper, which will appear, according to his announcement, April 6, is *Telephone Securities.*

The Telephone Chronicle, monthly, the official organ of the International Independent Telephone Association, will appear, according to announcement, April 1.

The Independent has been selected as the name of a paper to be published monthly by the Swedish-American Telephone Company, which will appear "in the near future."

That makes three—count them!—and they will all "fill a long felt want," and have significant bearing on the Independent telephone industry. We believe there has never been a time when so many papers appeared simultaneously. What better evidence could we have to show the immensity of the Independent telephone industry? Nearly every state has its publication—great or small—and the careful observer will note a constant improvement in these little papers. The literature of the industry is assuming enormous proportions and the specializing of this literature is beginning to show itself. *Telephone Securities* has for its mission the presentation of financial conditions of both the Independent and Bell operating exchanges and systems. *The Telephone Chronicle* will be the association's membership bulletin, advising and co-operating with state associations in the matters of mutual interest. It will advocate greater publicity for the cause in general. Doubtless *The Independent* will "feature" the manufactured product of the company publishing it; but it is safe to assume that it will contain other matter of general interest to Independents.

DRAW THE LINE CONSISTENTLY.

IN its current bulletin the International Association calls the attention of state associations to the importance of not permitting Bell-owned equipment manufacturing companies to exhibit at conventions. It is part of the mission of the International Association to draw the line between Bell and Independent operators. We believe the association does everything in its power to prevent Independents from giving Bell connections, but it would appear that a special warning would be proper, calling the attention of state associations to the importance of not permitting such operators to take part at Independent conventions. A notable instance and exception to this rule was the action of the South Dakota convention at Sioux Falls, in January. We will quote a portion of the proceedings of the South Dakota convention:

"To an inquiry by J. L. W. Zietlow, of Aberdeen, as to who might or might not be entitled to a seat in the convention, George W. Burnside, of Sioux Falls, replied that, while there might not be anything on the books of the association to prevent other than Independent telephone companies' representatives from becoming members and taking part in the deliberations of the association, it was his understanding that the organization was for Independent telephone men only, and he was not in favor of allowing representatives of the common enemy, or par-

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ties associated with it, a voice in the deliberations of the association."

The record of the convention shows that Mr. Burnside's suggestion took the form of a motion, which was seconded and carried "without a dissenting vote." The record further shows that Mr. Zietlow was called upon to talk on the subject, "Proper Equipment of a Local Exchange." The paper is printed in another part of this issue of SOUND WAVES. Further on in the proceedings of the convention, we find Mr. Zietlow's name appearing as one of a committee to formulate a specific plan for connections, with instruction to report at the next annual convention of the association.

With all due respect to Mr. Zietlow for the great work he has done in the development of the Independent telephone in South Dakota, it is generally known that his telephone system gives Bell connections. Mr. Zietlow does not deny that he has a territorial agreement with the Bell Company and that it is a very valuable asset in his business. Any "specific plan" for making telephone connections, suggested from Mr. Zietlow's point of view, would surely contemplate a Bell arrangement. We have no suggestion to offer to the International Association in a matter so complicated as this, but the thought recurs that it would be well for the International Association, in issuing its special notices to state associations, to make the fact clear that it is extremely important not to permit Independent companies, so-called, who give Bell connections, to have a voice in the meeting. It is certainly as vital to have the state associations know this as it is to warn them that it is not in keeping with Independent policy to permit the Bell-owned equipment manufacturer from making exhibits.

A BELL TELEPHONE CONVENTION.

IT will be a dull month when the Cumberland Telephone & Telegraph Company does not do something to invite adverse criticism from Independents. Early in February of this year the city council of Jackson, Miss., granted a franchise to an Independent telephone company, which proposed to install an up-to-date system and provide service at rates cheaper than the Cumberland company had been giving. Since the granting of the franchise the Cumberland has been working overtime in its efforts to have the Independent franchise annulled. A convention of the company's officials and managers, representing several southern states, was held in Jackson, March 6. The hall of representatives at the capitol building was chosen as the meeting place, and the proceedings opened with an invocation by the pastor of the First Methodist Church, which was followed by an address of welcome by the mayor of the town. General Manager Leland Hume, in his felicitous manner, followed the mayor. On behalf of the state, the president of the railroad commission responded. The routine of the meeting was similar in every respect to an Independent telephone convention, except that the Bell Company, evidently conscience stricken with its underlying motive, thought to invite a minister of the gospel who would clothe the transaction with the mantle of Christian charity.

Papers were read by different managers on different topics, and altogether the "convention" report required a column or two of space in many of the southern newspapers. To read the report of this extraordinary gathering, one would imagine that the best paid representatives of the Bell Company's Boston press bureau were on the spot. The newspapers gave accounts of three different meetings, but there was still another meeting held about this time and in the same city of which the press was not informed. It included a large number of the representatives that were named in the published reports of the public meetings, but the details of the proceedings did not appear. The secret meeting, behind closed doors, was a star chamber business session. The minister was not present. From what could be gathered by conversations overheard about the hotel lobby, the subjects discussed at the secret session were in every manner different from those which occupied attention in the three open sessions. Employes of the Bell Company work everywhere under orders, and in a public "pow wow" each must act the part of a guest. General orders from headquarters are one thing, and acting in the capacity of guests of the employer is quite another. It would be unkind to charge all Bell employes with thus playing the double rôle, but it is very evident that they were required to do this in the case of the Jackson meetings.

But the Cumberland company is giving the Independents at Jackson a full measure of hardship. The attorneys for the Independent concern claim that the franchise that has been granted constitutes a contract. The Bell will require the courts to affirm this contention. It uses the old and worn-out argument of divided service; increased expense; two bills; two bells; two books. What a pity that nothing new can be discovered!

It is easy to understand why the Bell Company offers nothing new in this respect, but it is rather difficult for us to understand just why it clings so tenaciously to an excuse that has been overcome from one end of the country to the other. The Independents will win in Jackson as they have won elsewhere, and in the meantime the Cumberland will have to busy itself in other quarters.

TREACHEROUS TELEPHONE LEGISLATION.

A GREAT PORTION of the time of several state legislatures is being occupied with a discussion of pending legislation which seems to have for its motive the working of injury or hardship to the interests of telephone operating companies. Nearly every Independent state convention has appointed its legislative committee to safeguard the interests of its membership in open lobby. Resolutions have been passed at these conventions pointing out the evil in specified bills, and the Independent telephone subscribers have been directly urged to voice this sentiment to the several members of the house and senate. Insofar as the associations have been able to influence this contemplated unfavorable legislation, nothing has been overlooked, but it would be well for Independents to be on guard at all times to prevent proposed injury. The Bell Company has had years of experience in the game of politics. It knows how to conduct a campaign of intrigue even better than it knows how to float certain bond issues. The public has seen many evidences of the methods employed by gigantic corporations. The Independents are thoroughly informed about the known systems that have been put into execution by the Bell trust. When legislation is intended to work hardship on the Bell Company it has its representatives on the ground to avert the danger. When hostile legislation is threatened and the Bell lobbyists do not appear, it is then evident that the Independents should seek the "nigger in the woodpile."

Any law that would compel physical connections between the Independent and Bell systems would surely have a tendency to destroy competition. Independent operators can explain to their subscribers how utterly helpless they would be in attempting to give satisfactory service with this club in the hands of the Bell Company. The hardship would work on any incoming or outgoing call—whether originating with the Bell or with the Independent system.

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Telephone Accounting Methods

By Charles C. Wilmot

THE growth of the telephone business is almost without precedent. The rapid increase of branch exchanges and toll stations, with many independent companies, has rendered the past and present systems of accounting and the filing of reports, records, etc., so inadequate and cumbersome that more up-to-date and time-saving methods are imperative in order to furnish the necessary data and statistics for the accounting department and management, of both the general office and individual exchanges.

The increasing demand of the business world for better and more far-reaching long distance telephone service has clearly shown the great necessity for a more uniform system of accounting and records among all connecting companies, to enable them to adjust their interchange business and mileage in a fair and equitable manner and at a minimum cost.

To emphasize the awakening of telephone managers in different parts of the United States to the great necessity of better and more up-to-date methods in their office management, we quote from two recent personal letters:

"I do not believe that you realize the number of telephone companies that are in need of a complete system of accounting that will each month give them some idea of what they are doing. In conversation with Mr. ——— of ——— Ohio, who is president and manager of the ——— Tel. Company, he said that his bookkeeper had quit and he could find no one who understood the work well enough to work out a system. From what I have seen of his books I think that they are out of date and told him that we were installing a new system that, from what I could see of it, was simple and accurate, and did not require the work that any other system that I had ever examined did, and that if he and his bookkeeper would come to our office that I would take great pleasure in explaining it to him in detail. I was thinking that if a meeting could be held in each district of the state for the purpose of explaining accounting system work and at the same time answer any questions that may be asked, it would do a world of good.

"We believe the medium-sized and larger exchanges are right now on the verge of awakening. The many tangled mix-ups in the work in their offices and the attention the National Association has given to the matter of accounting and the establishment in several different states of clearing houses will surely bring them to see the absolute necessity of systematic operation of the office and business departments.

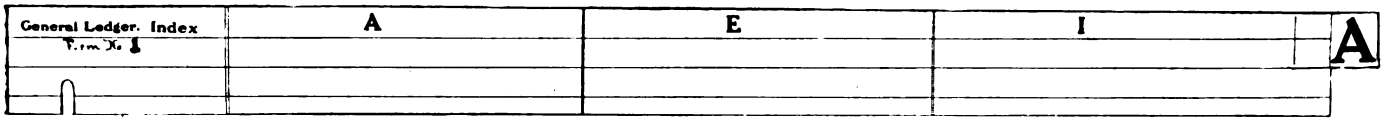
"The great majority of the telephone men do not seem to have any definite purpose to advance. They have read in the telephone journals in the past, from time to time, accounting articles of indifferent merit; the matter must be *properly presented* to them to get their attention, interest and action."

Many telephone companies have erected or leased valuable exchange buildings, installed the very latest type of equipment, and employed high-priced expert labor to operate same, but when it came to the accounting and filing department false economy has been very generally practiced. To use a slang expression, "any old way" was thought good enough for the office end of the business.

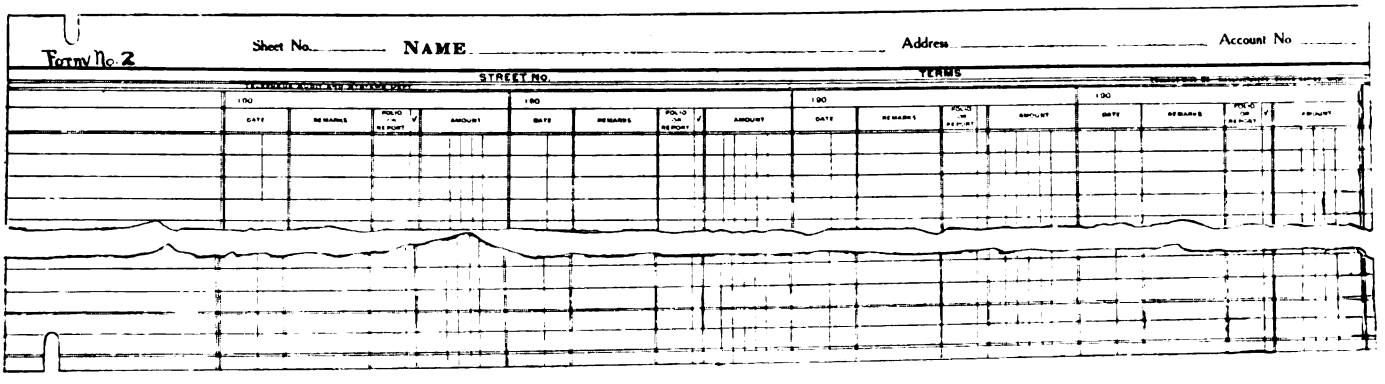
Naturally "confusion worst confounded" has been the result in many cases. Inquiries are now coming from all over the country: How can we now go to work to find out "where we are at"?

The first basic record of the telephone business is the general ledger, wherein must appear the capital stock, investment, operating, expense and representative accounts, so classified that a complete and comprehensive statement can be made up monthly and laid before the executive management of the company. This will enable the company to intelligently map out and pursue a policy of operating based on a knowledge of exact conditions.

SOUND WAVES, in its September, 1906, issue, gives the complete report of the national committee on standard accounting forms. This report outlines a very complete classification of general ledger accounts, which can be adopted, in whole or in part, according to the size of the company.



Form 1.



Form 2.

The illustrated copyrighted forms here given explain the practical uses of a set of general ledger records for a system of exchanges, toll lines and stations, which plans have been very successfully used during the past two years. Same can be made up for loose leaf binders, provided with lock and key or in bound books.

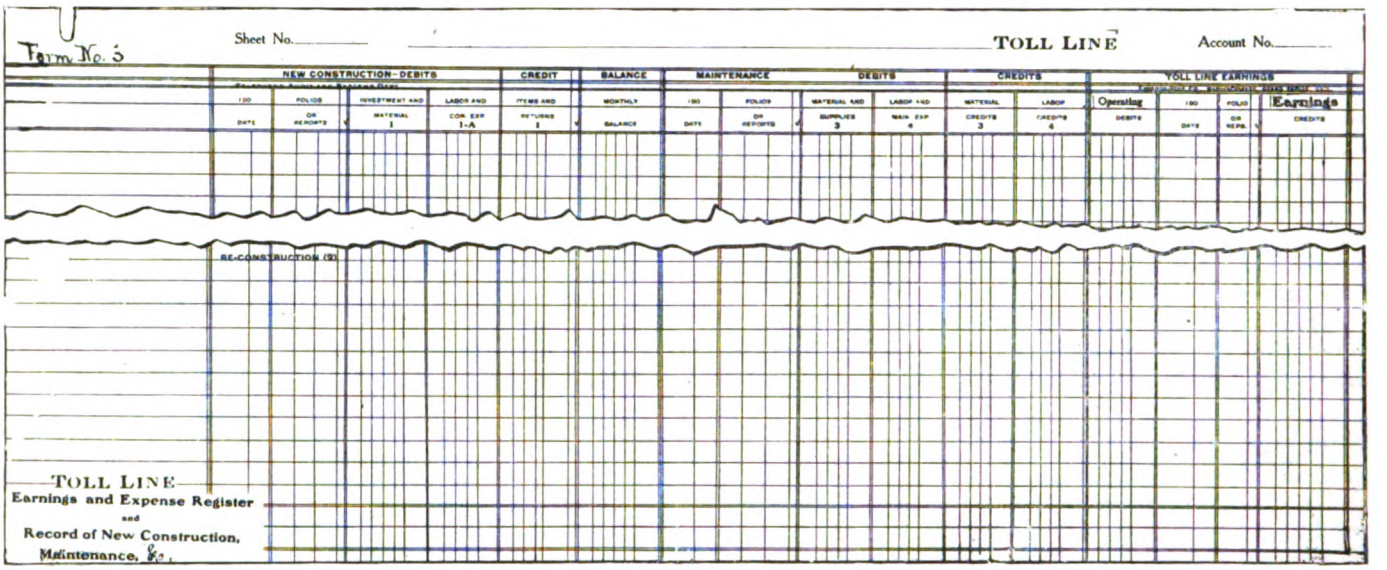
Form 2 is ruled with four money columns, same to be headed debit or credit, as desired by the bookkeeper. Some accounts being made up of nearly all debits and others of credit postings. This form to be used for all general ledger accounts (except for accounts with toll line sand exchanges, for which see Forms 3, 4 and 5).

Form 1 is used for a general index sheet. After a sheet tabbed "investments" are grouped, in alphabetical

order, such accounts as plant and equipment, real estate and buildings, underground construction, aerial construction, office furniture and fixtures, etc., etc., pertaining to the local exchange and general office.

side (Form 4) by monthly postings all earnings and income, with space for closing entries and a profit and loss showing.

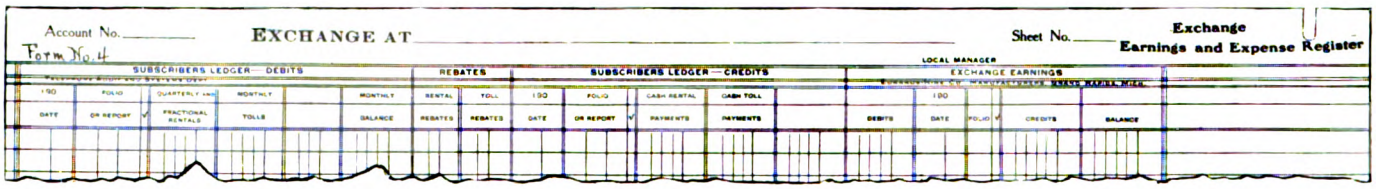
After index sheet tabbed "toll lines" would be



Form 3.

After index sheet tabbed "assets" would be grouped such accounts as the bank account (kept by totals posted monthly), petty cash, accounts receivable, accounts for cash advances to foreman, exchange managers, etc., accounts for material sold other companies, etc., etc.

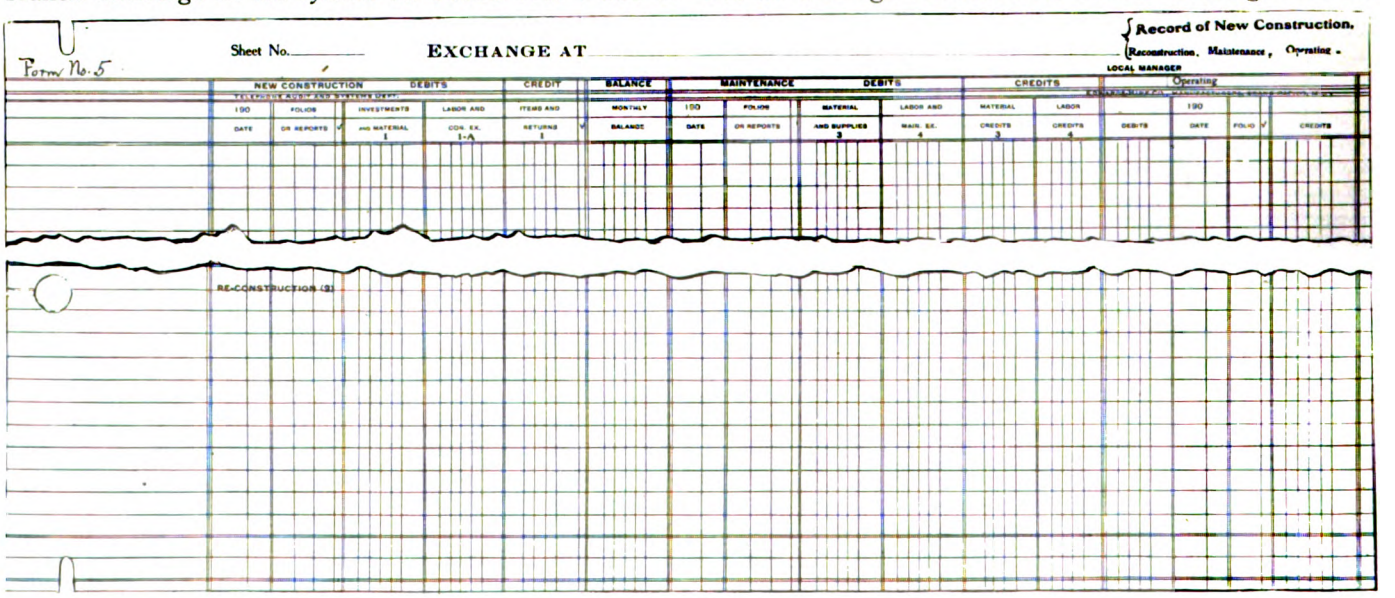
grouped the accounts with each toll line operated by the company (see Form 3). The printed headings indicate the complete nature of its uses for a record of original investment, new construction, maintenance and operating expense, and earning section for closing entries and a profit and loss showing.



Form 4.

After index sheet tabbed "exchanges" would be grouped, in alphabetical order, an account with each branch exchange in the system on Forms No. 4 and 5.

After a sheet tabbed "income earnings" can be classified all earnings not cared for on the exchange and toll



Form 5.

A careful study of this form will show that it provides (Form 5) space for the original investment, all new construction and reconstruction, also maintenance and operation the other

line sheets previously described, such as the earning of the local exchange of the general or head office, telephone rentals, toll earnings, pay stations, pole line earnings, etc., etc., as outlined in report of the national committee

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After index sheet tabbed "accounts payable" can be distributed (between a regular alphabetical index, tabbed on Form 1 index sheets) the various purchase accounts for construction and maintenance material, office supplies, etc.

For the general subdivision and classification of the construction, operating and maintenance accounts designated in the report of the national committee, we recommend a purchase and distribution register, provided with necessary columns, the sum total of all subdivisions under the head of construction, operating, maintenance and expense being posted monthly to ledger accounts, thus doing away with much posting and the keeping of so many general ledger accounts. All the data and information needed for monthly, quarterly or yearly statements can be taken from the purchase register.

The regular trial balance is taken from these forms, as is also the monthly report of the management.

A Successful Independent Company

By C. J. Wright

THE People's Telephone Company was organized and a charter granted August 31, 1888, to do a general telephone business in the province of Quebec, with headquarters in the city of Sherbrooke, to Mr. C. Skinner, who is still at the head of the company as general manager.

The company started with $5,000 subscribed capital, which later was increased to $25,000. At present the company has an authorized capital of $100,000.

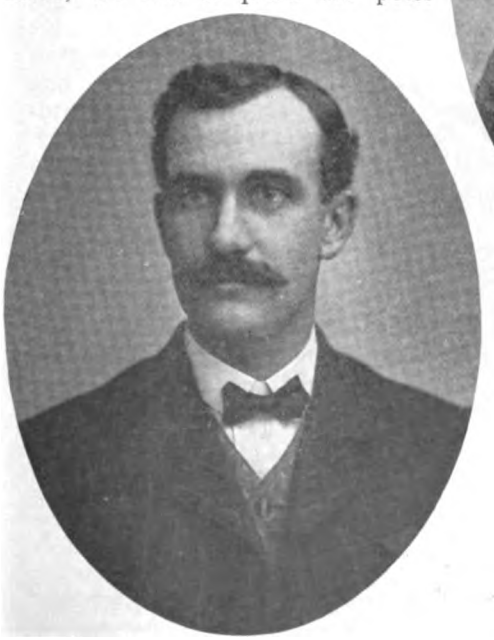
In the spring of 1889 the company took 106 of the 135 Bell Telephone Company's subscribers, on a five-year contract, at rates of $17 and $20 for residence and business, respectively, as against $30 and $35 charged by the Bell Company.

As no telephones could be bought at that time, the People's Company had to import receiver shells from France and get magnets, generators, etc., from Utica, N. Y., woodwork and all other parts from different places, so that the assembling of telephones in those days was not an easy task to accomplish.

Conditions of our telephone contracts called for one hundred subscribers to be connected before we could charge for service. May 1, 1889, we complied with this condition. Notwithstanding the fact that public sentiment was greatly in our favor, we had to place our poles upon private property. The citizens consented to this. The city council in the meantime had been interviewed by a Bell telephone agent, who had offered to reduce the Bell rates to $20 and $25, upon condition of having the exclusive right of telephone service in the city, and the worthy city fathers decided to accept the offer and actually entered into a three-year contract with the Bell Company upon these terms, agreeing further to continue the contract in perpetuity.

Col. E. S. Bernard, President.

C. Skinner, General Manager.



C. J. Wright, Secretary and Assistant Manager.

An order in council was passed in July, 1889, and duly served at the office of the People's Telephone Company, notifying it that within fifteen days it must remove its wires or they would be removed by the city officials. As we understood that this order meant business we met it in a business-like way; and within the specified time the People's Telephone Company obtained an injunction restraining the city from going into the wire business. From that time on for the next ten years trouble was always in sight. This company has passed through all the obstruction invented by the Bell Telephone Company for annoying independent companies, such as opposition in the legislature, manipulating municipal councils, obtaining exclusive privileges for telephone service and exclusive privileges to connect with railway stations, obtaining injunctions, securing protests, cutting rates, obstructing the building of telephone lines, tampering with lines and telephones, and employing agents to deceive and mislead subscribers. Having failed in all that goes to make up the catalogue of unfair dealing, the Bell Company has, as a last resort, decided

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Main Office of People's Telephone Co.

that it must improve its wretched service or go out of business.

In 1903-4 the company reconstructed its entire telephone plant in the city of Sherbrooke, replaced the old ground line system by aerial cables and new metallic lines, replaced old switchboards by installing the latest up-to-date central energy or flash light signal system, and old telephones were supplanted by the best up-to-date central energy long distance telephones, at a total cost of $15,000.

The switchboard necessary for this improvement, with a capacity of six hundred telephones, was made and installed by Couch & Seeley, Boston, and its complete efficiency in every particular is a credit to the firm.

In 1904-5, up to April 1, 1905, the company reconstructed its entire plant at Coaticook, installed a new metallic line switchboard and connected its one hundred and fifty subscribers by metallic lines, at a cost of $3,000. Today there are over three hundred and fifty subscribers.

Coaticook, Quebec, has a population of over 3,000, and lies in a pretty farming section of the eastern township. It is on the main line of the Grand Trunk railroad, about half-way between Montreal and Portland, Maine. It being a farming locality, we have a large number of farmers on our line, which makes it very profitable.

We rebuilt the entire North Hatley system, and put up ten miles of new wire, thereby increasing business by twenty-six telephones and giving a total of fifty-six telephones for this place. North Hatley is a beautiful summer resort lying on Lake Massawippi, twelve miles from the city of Sherbrooke, and is reached by the Boston and Maine railroad. This famous resort is visited every summer by over twelve thousand people, who come from all over the United States, and either board or have cottages of their own.

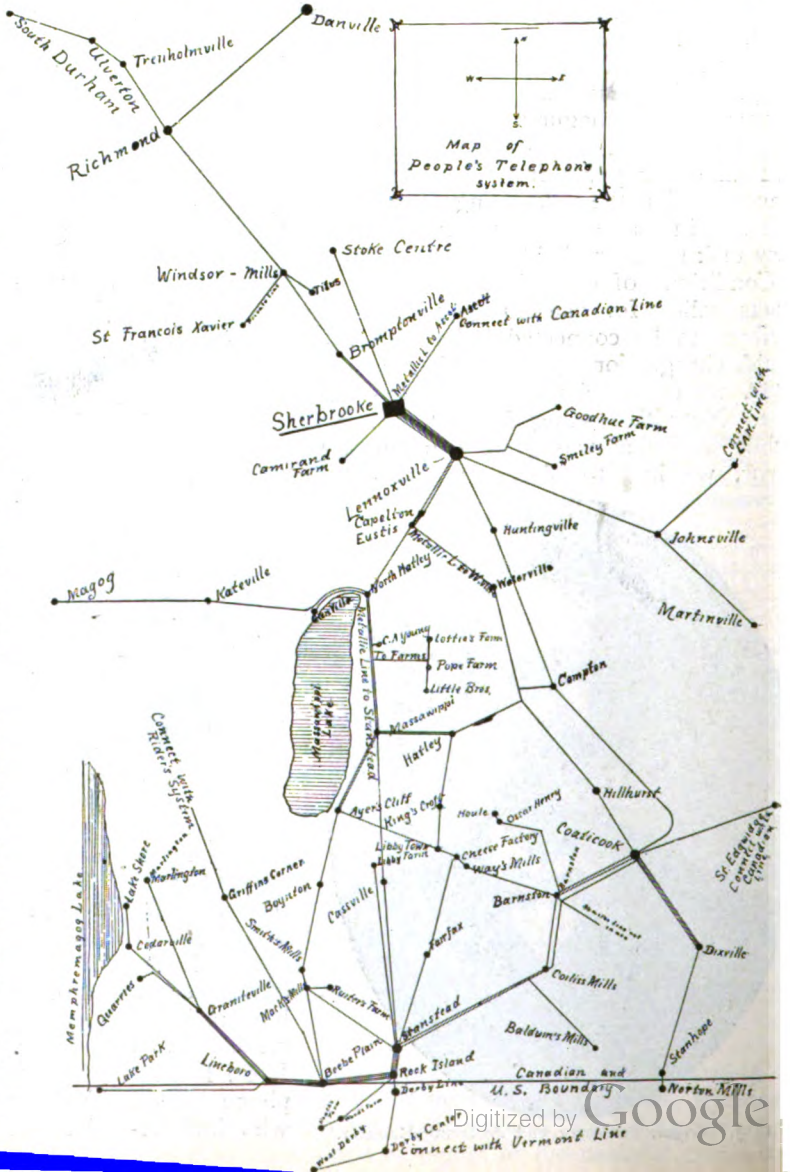
We extended the metallic line from Sherbrooke to Windsor Mills, rebuilt the entire system, and placed all subscribers in Windsor Mills, [illegible] in number, within one-half mile of ex- [illegible] is an-

Trunk railway, fifteen miles from Sherbrooke, and is a manufacturing town, with large paper mills, operated by the Canada Paper Company, Ltd. The Hamilton Powder Company also has large works at this place.

There are many towns and cities in the Dominion which are smarting under the excessive rates and questionable methods usually applied by the Bell Company where competition has not come to their relief. But there is not always a clear way to obtain capital or experienced men to successfully launch a company into the independent telephone field.

The facilities offered at the present time by telephone manufacturers for the supply of equipments for complete and up-to-date telephone systems is an advantage that early companies did not enjoy. Public sentiment, capital, experience and push are requisites for success in any business, and the telephone is no exception to this rule.

After eighteen years the People's Telephone Company still occupies a place among the independent telephone fraternity, having over 1,000 subscribers, eight



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telephone exchanges and 400 miles of toll lines. We have for three years operated a central energy or common battery system in the city of Sherbrooke, and remodeled the entire system, replacing ground lines with metallic lines and switchboard of an up-to-date character. The last year has been a prosperous one for the People's Company, as it will have installed over 300 new telephones when its fiscal year ends in April.

The Law and the Telephone

By George H. Murdoch, Jr.

Obstruction in Streets.—Negligence.—John D. Gasper sued the Louisville Home Telephone company, A. J. Dressell, and the city of Louisville, to recover damages for a personal injury alleged to have been sustained by him through the joint negligence of the defendants. The jury rendered a verdict in his favor in the sum of $2,000, assessing $1,750 of this against the Home Telephone Company, and from this judgment the telephone company appealed. The judgment was affirmed in the Court of Appeals of Kentucky, which said in part:

"There is but little conflict in the testimony, and it cannot be denied that appellee suffered greatly from his injuries, or that they are of a permanent nature, and, being an old man, he may be expected to endure yet further suffering from the fractured hip. According to the testimony, appellee's injuries were received in the following manner: Having entered the twenty-foot alley, he saw a wagon loaded with kindling wood, which was standing on its west line. There were some men with the wagon, and appellee stopped by it and engaged in conversation with them. On the east line of the alley, and nearly opposite the wagon, there was anchored to a block of wood in the ground appellant's guy wire, which ran at an angle of forty-five degrees to the top of a high telephone pole, which was a part of its plant, and also situated in the alley. The wire was anchored 120 feet north of the mouth of the alley, eighteen inches out into the alley, and on account of the sagging of the top of the pole, about fifteen inches toward the west, the guy wire was made to hang further out in the alley to the west as it became higher. While appellee was standing at the wood wagon, a heavy delivery wagon owned by Dressell was rapidly and negligently driven into the alley, taking the east side because of the standing wagon on the west side, and the hub of its right-hand wheel collided with the guy wire, which caused the wheel to slide up the wire, and until it overturned the wagon toward the west, throwing it upon appellee, thereby producing his injuries. The evidence also conduced to prove that there are other and safer ways of anchoring wires into the ground than the one adopted by appellant with respect to the pole in the alley. Thus, by a stub (which is a pole or post) placed in and rising about eight or ten feet above the ground at the edge of the alley, a guy wire may be so elevated as to remove all danger of collision with vehicles or persons. Yet another way to prevent injury from a guy wire is to inclose it by pipes or covers, or to attach it to the ground so near the edge of the alley as to remove any danger of contact with persons or vehicles using the alley. Certain it is that a wire three-eighths of an inch thick running from a point in the ground eighteen inches out in the alley, and along a fence so near its color as to render the wire practically undiscernible, may, without the aid of the imagination, be regarded as an obstruction dangerous to individuals and vehicles passing over or through the alley. At any rate, in view of the foregoing facts, we are unable to say the finding of the jury that appellant was negligent in thus maintaining its guy wire was unsupported by the evidence.

"There can be no question but that a telegraph or telephone company may be held liable for damages to a person injured by its negligence in obstructing a street or highway with its poles or wires. Thus, in Joyce on Electric Law, Section 609, it is said: 'Where a traveler is injured by collision with a guy wire, negligently placed or maintained by the company, the latter will be liable where the traveler was in the exercise of due care.' In Thompson's Negligence, Section 1233, we find the same doctrine announced in these words: 'If a telegraph, telephone or electric light company so erects its poles, or suspends its wires, as to make the highways dangerous to ordinary travel, and if a traveler, proceeding with ordinary care, comes in contact with its poles or wires so erected or suspended and thereby sustains injuries, he or any other person having a right of action for such injury may recover the resulting damages of the company.'"—93 S. W. 1057.

Sale of Plant.—A contract of sale of the total equipment of a telephone company was as follows:

"'Know all men by these presents, that we, A. L. Rehard and T. J. Campbell, owners of the Clover Leaf Telephone Company, of Lathrop, Clinton county, Mo., parties of the first part and N. M. Rogers and the Clinton County Mutual Telephone Company, parties of the second part, witnesseth: That the parties of the first part have this day sold to the parties of the second part the Clover Leaf Telephone Exchange, consisting of poles, cross-arms, wire, switchboard, telephones, office fixtures, and all other equipments belonging to and in use by said exchange, upon the following terms and conditions, to wit: Parties of the second part agree to pay cost and carriage on above named plant and its equipment on the present market value of the invoice; this inventory to be made by two reputable, experienced telephone men; these two men to be selected by P. M. Gilchrist, Willis Chowning and H. C. Shepherd. Those two men, thus selected, shall be the sole judges of all values. Said parties of the second part further agree to pay to the parties of the first part the sum of $250; said sum to cover and be in full payment for the construction of said plant. Said parties of the second part agree to pay the sum of $1,000 for the business and good will of said telephone exchange. The inventory of said plant to be made not later than August 1, 1903, at which time said parties agree to pay spot cash in full for said plant, construction, and business and good will. The parties to this contract each agree to deposit the sum of $1,000 in the First National Bank, said sum to be forfeited in case either party to this contract fails to comply with the terms and conditions of this agreement.'

"The three persons named, whose duty is was to select the two telephone men to make the invoice and fix

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values, selected Pascal Parker and James M. Deacy, who made their inventory and fixed the values on the property, and the respondents paid the full amount of the purchase price for all said property."

The purchasers claimed that Parker and Deacy made a mistake in their invoice of the amount of wire belonging to such telephone exchange and erroneously included in their inventory 3,200 pounds of No. 12 wire, of the value of five cents per pound, aggregating the sum of $160, and 13,000 pounds of No. 14 wire, of the value of five and one-half cents a pound, amounting to the sum of $692.50, and sued to recover the amount overpaid by them on account of said wire. The judgment by them in the trial court has been reversed by the Kansas City Court of Appeals, which *held* that the appraisement, in the absence of fraud, was conclusive as to the amount of material, as well as the valuation; the stipulation as to values indicating merely that the valuation was to be based on the appraisers' expert knowledge.—97 S. W. 951.

USE OF RAILROAD RIGHT-OF-WAY—DESTRUCTION OF LINE.—Kirby's Digest, Sections 2934, 2936, expressly authorized telephone companies to enter a railroad right-of-way and survey and lay out its line, being liable for damages sustained, and further authorized the condemnation of its way over a railroad right-of-way on the parties being unable to agree. Sections 2903, 2905, gave a property owner damages against a corporation authorized to appropriate private property when it does so without first paying therefor. Plaintiff, telephone company, constructed its line over private land by the verbal consent of the owners, and along a highway under authority granted by Kirby's Digest, Section 2934, after which a railroad was constructed along the way occupied by the telephone line, the railroad having acquired its right-of-way by purchase from the landowners, and vacation of county roads. *Held,* that the telephone lines being found not to be a nuisance, the railroad company, after repeated demands on a telephone company to remove the line from its right-of-way, was not entitled itself to remove the line and thereby destroy its utility.

Kirby's Digest, Section 1899, makes it a misdemeanor to willfully and intentionally destroy, injure or obstruct any telegraph or telephone line and imposes a penalty of double damages. *Held,* that the words "willfully" and "intentionally" implied an evil intent without justifiable excuse, so that destruction of a portion of a telephone line by a railway company which is mistakenly believed was an unlawful obstruction of its right-of-way, and was also a hindrance and menace to the safe operation of the railway, was not an act for which the owners of the telephone line were entitled to recover double damages under such section.—St. Louis, I. M. & S. Ry. Co. v. Batesville & Winerva Telephone Company, 97 S. W. (Ark.) 660.

CONSTITUTIONAL LAW.—Constitution, Article 15, Section 14, providing that any person shall have the right to maintain telephone lines within the state, and the legislature shall by general law provide reasonable regulations to give effect to the section, is not self-exacting, and, in the absence of legislation authorizing it, the placing of telephone poles in the highways is an unlawful obstruction thereof, and, when the legislature enacts a law on the subject, it must be a general one, so as to give effect to the constitutional grant. Session Laws 1905, page 122, Chapter 55, authorizing the maintenance of telephone lines along the public highways outside of incorporated cities, is in conflict with Constitution, Article 15, Section 14, authorizing the maintenance of telephone lines within the state, and directing the legislature to provide by general law regulations to give effect to the section, because of its failure to enable the business to be conducted in cities; and Police Code, Section 4800, subdivision 43, as amended by Session Laws 1897, page 203, empowering city councils to regulate the erection of poles and the stringing of wires within the city limits, does not remedy the defect.—State *ex rel.* Crumb v. Mayor, etc., of City of Helena, *et al.,* 85 P. (Mont.) 744.

RIGHT TO CONDEMN LAND.—As telephone and telegraph companies are distinct companies, and as Code 1892, Sections 854-858, inclusive, and Section 4291, relating to telegraph companies, and authorizing them to exercise the right of eminent domain, etc., repeal Acts 1886, page 93, Chapter 38, authorizing telephone or telegraph companies to exercise the power of eminent domain, a telephone company has no authority to condemn land, though Constitution, Section 195, declares that telephone companies are common carriers. The right of a telegraph company to exercise the power of eminent domain conferred on telegraph companies cannot be defeated by the owner of the land sought to be taken showing that the company is but a dummy company for a telephone company, that it has no capital stock, and that it was organized for the purpose of enabling the telephone company to do indirectly what it could not do directly, and that its organization was unlawful.—Alabama & V. Ry. Co. v. Cumberland Telephone & Telegraph Company., *et al.,* 41 So. (Miss.) 258.

CUTTING TREE IN STREET.—Where, in an action against a telephone company for cutting a tree in a street in front of plaintiff's property, it was proved that the tree was not cut until at least a month after defendant's poles and wires were constructed, and there was no evidence that there was any necessity for the act, an instruction that if defendant "unlawfully" cut the tree, and the market value of the property was thereby depreciated, plaintiff was entitled to recover, was not erroneous; the word "unlawfully" being mere surplusage. Where the act of a telephone company in cutting a tree in the highway in front of plaintiff's premises was unlawful, it was immaterial that the cutting was negligently done.—Betz v. Kansas City Home Telephone Company, 97 S W. (Mo.) 207.

FRANCHISE TAX.—Act November 11, 1892 (Laws 1891-93, page 299, Constitution 3, Article 3, Section 1; Kentucky Statutes, 1903, Section 4077), providing that every telephone company shall, in addition to other taxes, annually pay a tax on its franchise to a city where its franchise may be exercised, not indicating that it was intended to be retrospective, does not authorize such tax by a city of the fiscal year of such city commencing September 1, 1892, as of which date all property was assessed for municipal purposes.—Ohio Valley Telephone Company v. City of Louisville, 94 S. W. (Ky.) 17.

DOING BUSINESS WITHIN STATE.—The "doing business" referred to by the statute is a transaction of the business for which the company was incorporated, and does not include the sales of its shares by a telephone and telegraph company, so as to render void a note given in payment therefor.—First National Bank v. Leeper, 97 S. W. (Mo.) 636.

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Some Questions Answered

By the Troubleman

Editor Sound Waves: I want to arrange my toll lines so that all stations will ring a certain one and that one do all the calling and checking. How can I accomplish this? I also wish to arrange my metallic farm lines in a cable about 1,000 feet long. Can I construct such a cable, using duplex wire heavy enough to carry the lines, and still not use fuses or lightning arresters until I reach the exchange with the cable? Will you also please recommend the best size voltmeter to use for testing crosses, grounds, and other troubles of toll lines?

You can accomplish your purpose by installing a very low resistance drop at the central office. We would recommend that you use 80 ohms. A drop of this kind takes practically all of the energy and leaves very little for the bells on the line. You might also use pulsating generators at the stations to accomplish the same purpose. By doing this the subscriber would throw the ordinary line drop without interfering with the alternating current ringers.

It would be practical to build up a cable of No. 18 duplex wire that would be large enough for toll line purposes and still permit the elimination of fuses and arresters. All over the east companies are using what is known as the McCoy system. No. 18 twisted copper pairs are employed for distribution, very little lead-covered cable being used. The messenger wires carry rings and the No. 18 pairs are threaded through them. For a temporary system the practice is to be commended. The Bell Company practices this method when it is experimenting with prospective subscribers to see if it can get business away from Independents before putting in permanent systems.

The voltmeter best adapted for the tests you suggest has two scales reading up to 40 and 4 volts. The 40-volt scale measures 100,000 ohms resistance and the 4-volt scale measures 10,000, while the third resistance of 1,000 ohms is ascertained by winding a 1111.111 ohm shunt over the 10,000 ohm winding. With this resistance acquired it is easy to handle testing measurements. No doubt you are familiar with the ordinary method. For example: If you have a 30-volt battery and short circuit it and the voltmeter you get a reading of 30 volts. Suppose, under these conditions, you open the circuit and put in the external resistance to be measured, your scale would then show 20 volts. You are then using the 100,000 ohm scale. Then the external resistance will measure 30 times 100,000 divided by 20, minus 100,000, giving a result of 50,000 ohms. If you desire a reading in the thousand ohms and use three volts on the 10,000 ohm scale, a short circuit reading would show 3 volts. Include then the external resistance, and your voltmeter will drop to two volts. You now have three halves of 10,000 minus 10,000, giving a result of 5,000 ohms. If you desire a still smaller reading put the 1111.111 ohm shunt about the 10,000 ohm scale and use the three-volt battery. The total resistance is 1,000 ohms and the voltmeter scale will show 3 volts. Again, putting in your external resistance in series with the voltmeter and the three-volt battery shows a reading of 2.95. You will then have 3 divided by 2.95 and multiplied by 1,000, from which you subtract 1,000, giving a result of 16 ohms. The series method of measurement is considered the best practice.

Editor Sound Waves: We have prices that vary from two and one-half to three cents per foot on double and single wrapped dry core cable. The single wrapped cable appears to be better than any we have ever seen before. We would like to know whether it might be as good as other makes of cable that are double wrapped. Why is double wrapped cable better, and why do most companies use it instead of single wrapped? Is there any difference in the installation resistance, and how much? Any other information that you can give will be thankfully received, for there is a difference of nearly $100 in the prices.

We do not believe that any manufacturing company contends that its single wrapped cable is better than its double wrapped. Double wrapped cable gives better insulation, is not so liable to break down, and in every way stands the strain better. Most operating companies use the double wrapped cable because their buyers know their business. There should be considerable difference in cable resistance between one wrap and two wraps. Two wrappings of paper applied spirally in opposite directions give results which have cost manufacturers a lot of money to learn. A difference of $100 in the price of cable should not stand in the way of your selecting the double wrapped. It is always better to start right, and in your case to spend $100 more in the beginning will be better than to spend $200 or more and lots of time looking for trouble later on.

Editor Sound Waves: Will you please answer why all of the grounded lines entering here are affected by induction from the electric light system to such an extent that their use at night is practically impossible. Our common return system in town and the metallic rural lines are quiet as long as they are kept free from grounds. If this condition is caused by a ground in the lighting system, should not the lighting company remove it? Grounds are not required in its operation.

Grounded lines are always noisy in the proximity of street lighting systems, because it is impossible to transpose them to offset the effect of electro-magnetic induction. The only way to effect a cure is to adopt full metallic and pay close attention to the transposition of the lines. When electric lighting circuits are in pairs free from grounds it is possible to operate a grounded telephone system without disturbance. We know of such a system with 650 lines. However, this system is extremely noisy when the 2,100 volt alternating lighting system gets a ground on one side. Grounded alternating current trolley systems are usually disastrous to telephone systems. When the single-phase trolley system from Fort Wayne to Kendalville was started the five metallic toll lines of telephone companies were practically put out of commission. The ordinary common return system is free from noises only when free from grounds. The earth currents play havoc when the lines beside the electric light induced currents have a chance to flow off at the wrong spot. If the ground is on the electric light circuit your lines will be assailed by an earth-seeking potential, electrostatic by nature, proportioned to the potential of the good wire above the wire which is grounded. If your electric lighting company will not take warning from the noises in the telephone it will soon encounter greater trouble. As soon as one wire goes down the other side of the circuit begins to feel the stress, and will break down the installation in a new place. When it does this the electric lighting company will discover that it is carrying a big load, which is usually followed by a smoking armature or a bad bearing. In California the parallel circuit, itself metallic and fully transposed, reveals exactly the state of the installation of the power wires. When a telephone begins to hum it discloses that the installation is giving way.

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and when the hum becomes a roar it shows that the insulation has given away, and the ground is naturally the result. When a persistent ground reveals itself on the power circuit, fixing a ground on the clear side will start an inquiry by the power people. This suggestion is offered for your self-defense.

The ordinary series arc circuit is usually a bad one, and if a ground occurs it will cause electrostatic strains which can only be cured by placing a ground on the arc circuit where it parallels your lead. This will make two grounds and will short circuit a number of lamps, and, of course, will start an investigation. Electric lighting companies never require force to compel them to hunt grounds, but you must be sure that you know your business if you contemplate a second ground for them.

Editor SOUND WAVES: I have a Kent voltmeter with a measuring capacity of 6 volts and 20 amperes. Please give me directions and diagram showing connections testing resistance in transmitters, receivers, induction coils, ringers and generators. I would also like a rule for testing of line and cable resistances, installation of circuits, or condensers, tracing the circuits through cables, or switchboards, and for grounds or crosses on toll lines.

To test the resistance of transmitters, receivers and the like with your instrument, would be to connect the ammeter, battery and resistance in series, and observe the reading of the ammeter, and also the reading of the voltmeter. Ohm's law is that the current is equal to the electromotive force divided by the resistance. Then

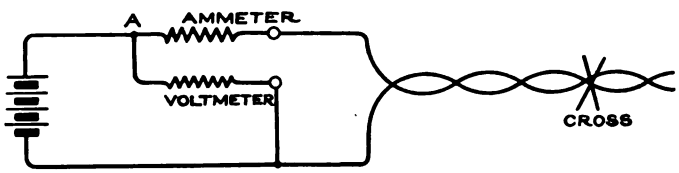

Figure 1.

C is equal to E, divided by R; or R is equal to volts divided by amperes. To find line and cable resistances the same steps should be taken, but when it comes to finding the insulation of circuits and condensers, or finding crosses or grounds on toll lines, the voltmeter will be of no avail. Answer 1 covers the ground fairly well, and will indicate to you how to find resistances ranging from small units to millions of ohms. To find crosses and grounds you should use the bridge. To find resistance of condenser with such a device would be impossible, because no visible direct current will pass through a condenser. Nearly any of the telephone books of authority will help you in your present dilemma.

Editor SOUND WAVES: We wish to utilize the speaking arc light in creating public interest in our telephone business. Can you give us a circuit that has been found to work successfully? Can a common battery 24-volt transmitter or an ordinary local battery transmitter and induction coil be used in this circuit, or would it require a special transmitter and coil?

Figure 2 shows the simple use of the speaking arc. In series with the battery are two resistance coils and

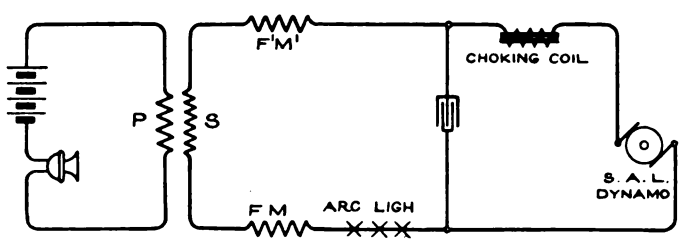

Figure 2.

two retardation coils. Bridge the battery, resistance and reaction coils by a condenser, a great deal like the common battery operator's telephone set. The reactances and resistances are naturally low enough to allow suitable current to pass and are large enough in wire size to carry four or five amperes of current. The two coils marked resistance and reactance will take most of the current from the transmitter, and should free it from damage liability. The common battery would be preferable, possibly owing to its normally higher resistance. The whole circuit of Figure 2 reminds one of a common battery operator's set. Instead of the induction coil primary the arc takes its place.

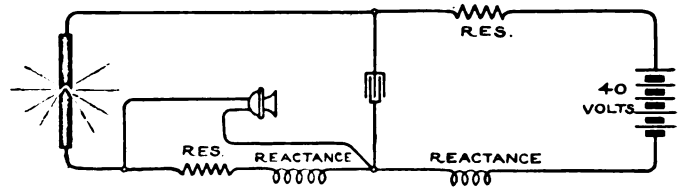

Figure 3.

In Figure 3 is shown an arrangement where the field magnets F M and F¹ M¹ are in normal series with arc lights and the dynamo. Inserted into this circuit in series is the secondary coil of a transformer. In the primary circuit of this transformer is placed a transmitter and battery. Simply a local battery primary circuit. By suitable adjustments of current in the transmitter circuit all the arc lights in the circuit should reproduce the sounds spoken into the field magnet microphone. This method is not advised except in case you are a lonely tender of an isolated arc lighting plant and want to talk to somebody. You might play a joke on the people of the city by making the arc lights sing and talk. You might be able to tell these people in sepulchral tones to quit drinking, or that the council should raise your salary. The first method shown is the one you should use. The resistances and reactances of the coils will have to be worked out by yourself. In reverse to this is the listening arc. At the World's Fair you undoubtedly saw the apparatus whereby the rays of an arc light were caught and converted into sound. At one end of the Electricity Building a man played a horn into a speak-

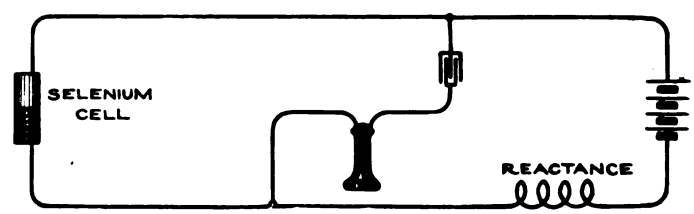

Figure 4.

ing arc, which was guarded by a parabolic reflection. They did not do much talking, but it would reproduce the bugle notes. At the receiving end was also a parabolic reflector, which focalized the rays on a little selenium cell, as shown in figure 4. The selenium changes its resistance according to the varying light rays, and the receiver follows up the changes, converting the waves into sounds. In the first figure the arc light should have long or flaming arcs. In sending to Figure 4 the arc should be as small as possible. This subject is interesting, and no doubt you could make quite a stir among your friends in a telephone way by working up experiments along lines indicated by both Figures 2 and 3.

Editor SOUND WAVES: We have one grounded line that leads into a town where there is an electric light plant. Our wire runs about three feet from the electric light wire. When the light plant starts up there is so much roaring or humming on that line that the subscribers can hardly hear anything, but

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in the daytime it is all right. What would be the effect on our wire and the four telephones on the line if the line came in contact with the charged electric light wire?

There is no remedy from your standpoint. It is possible that the electric light company is at fault by having one of its wires grounded. This will make your lines hum and roar and make unseemly noises. The only remedy you have is to make your line fully metallic, transpose it, and see that the insulation is good. The electric light people might have a ground, which, if removed, would be of great help to you. Your troubles are due to induction, apparently both electrostatic and electromagnetic. If the lighting line is clear, you will have no electrostatic induction. If your grounded line parallels the lighting wire, and that wire is of the single wire series service, you will have electrostatic induction. If the electric light wire when in operation hits your telephone wire you will certainly lose four telephones, a switchboard drop, and possibly a few citizens, too.

Editor SOUND WAVES: During a severe storm there is a continual loud, pounding or snapping noise in our telephones, sometimes hard enough to ring the bells. At such times it is impossible to use the line, which is a metallic circuit. What is the cause of this and how can it be remedied?

Your trouble is due to certain static effects. The line equalizes itself constantly, and drops fall and bells tap. Driving snow or wind or wheat chaff will cause this trouble. To remedy this effect, bridge a thousand-ohm ringer across the line, tap the middle point, and ground thoroughly. This path will carry off the charges and keep your line near earth potential. Possibly you would want such a discharge point at both ends of your line, but one in the middle of the line would be sufficient. When the storm is over remove the coils from their bridged connection.

Editor SOUND WAVES: Will you please tell me how I may put telegraph instruments on a telephone line without interfering with the telephone service?

To use a telegraph service over your metallic telephone line you can use repeating coils at each end of the telephone line and tap the line side middle points to your telegraph instruments. Or you can put two 1,000-ohm ringers across your line at each end and connect the middle points of the ringer coils to your telegraph instruments. It is usually preferable to bridge the telegraph set with a two-microfarad condenser, to smooth out the telegraphic impulses. In using repeaters be sure that you have the ring through type, so that your line ringing will not be weakened.

Editor SOUND WAVES: We have a farm telephone which has caused us lots of trouble. It gives out a grating noise, and you cannot understand conversation by means of it. It is all right at times, but it is usually all wrong. It seems to be all right when we get to it, but when we go away it is out of order again. The subscriber says it is always worse in the evening. The instrument, a new one, is just from the factory. We have another instrument which has magnetized bell magnets. How can we get the magnetism out of the coil, or will we have to get a new ringer?

These come and go troubles are hard to find. Evidently you have a series telephone with a loose connection somewhere. If you cannot find it, it is reasonably certain that it will not submit to absent treatment. Or, if it is a bridging set, your transmitter circuit is not right. Possibly your hook contacts touch too lightly. You should be sure that the hook contacts fit tight. You ought to be able to run the trouble down at one visit. You seem to have the universal trouble of sticking ringers. Take the ringer magnet off and put on a new one. There seems to be many cases cured this way. Some take the ringers apart and mix the parts up with other ringers, and get relief, but no one seems to know just why ringers stick.

Editor SOUND WAVES: Please explain how to determine the resistance of a pair of ringers. I sometimes wish to rewind a ringer that is partly burned out, but do not know when I have the proper amount.

All ringer coils should be stamped by the manufacturer. If you have both ringer coils burned out, wind both of them to 800 ohms each, if you have bridging service. If you have series service, wind them to 40 each. If you lose one coil, measure the good coil with a Wheatstone bridge. If you have no instrument to measure with, use a receiver, as shown in Figure 5. You will observe four new dry cells, which should have the

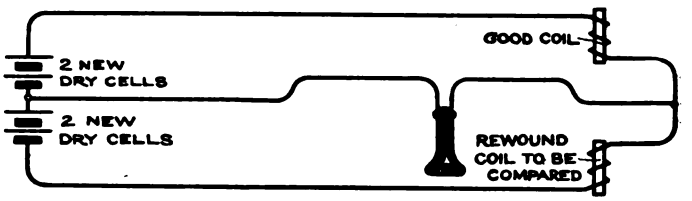

Figure 5.

same pressure. In series with these batteries are the two coils and the rewound one, which you are trying to wind like the old one. The dry cells are divided, and from the middle point is connected a receiver. If a tapping on the connection between the coils is heard it shows an unbalance. So wind the coil to that amount, which will so balance the circuit shown in Figure 5 that you will hear no noise in the receiver when you tap the connection between the coils. You should have a good Leeds & Northrup No. 2 bridge, and $100 could be most economically invested in this device.

Editor SOUND WAVES: Will you please tell me what capacity condenser to use with pole-changer for alternating current? And can pole-changer be used without condenser?

The two-microfarad condenser is ordinarily used. A pole-changer can be used without a condenser, but the sharp points in the waves make noise, and the condenser flattens out these sharps and brings comparative quiet.

Editor SOUND WAVES: I have three country exchanges on which the farmers' lines are grounded circuits. The lightning protection at present consists of a fuse block with fuses and small carbon blocks in the box on the terminal pole and carbon blocks about two inches square in the office. Each line has a separate ground rod at central. Could I use one good ground at the terminal pole for all the lines? Also wouldn't it give better lightning protection to have the large carbon blocks in the box on the terminal pole and the fuse blocks inside the office? Should I run all the lines metallic from the distributing rack in the office to the box on the terminal pole and ground the one side of the block there?

It would be better to have one good ground at the terminal pole, and it would be better still to have all of your protection at the terminal pole. You could have the fuses inside. In some cases it is preferable to have your fuses on the line side of the arresters. Then if your arresters are grounded, an excessive earth-seeking current would burn the fuses, but ordinarily it makes no difference in the usual every day life of a telephone exchange. It would be preferable to run metallic lines from the pole to the switchboard. You could use the one ground you propose to establish at the terminal pole. I

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am assuming you have cable, and this process would help to reduce your cross talk tendency.

Editor SOUND WAVES: I am employed by a telephone company, and we are up against an electric light proposition. When the light company turns on the incandescent lights it throws an awful lot of noise on most of our lines, but it is even worse when the arcs are on. Ours is a McClure system with about a half dozen metallic lines. There is some, but not much, noise on the metallic lines. We have had a good telephonist to locate the cause, but he could not. He tested the entire light system and could not find a ground on it. He tested our ground and found it good. He recommended cutting in some repeating coils on the cord circuits, and that cuts the noise down considerable, but does not do away with it entirely. Our lines are on the opposite side of the street, except where we cross diagonally. Both the light company and our own have been over the two systems several times, and can find no place where the wires touch each other. The accompanying diagram may be of some help to you. Telephone lines are indicated by heavy lines; electric light by dotted lines. Electric light system is three-wire. One of our lines is particularly noisy; it is parallel with the electric light line for about eight spans, and

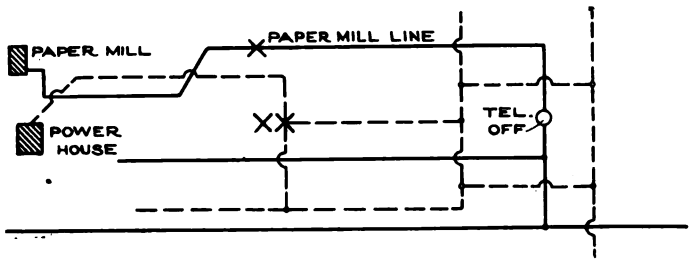

Figure 6.

is shown in diagram as the paper mills line. One span is about five or six feet away and the rest ten to twenty feet. It is metallic and transposed at every other pole. We have cut the paper mills line at X, as shown in the diagram, which leaves it clear to the office, but it is noisy beyond the office. When this line is cut at this point it does not help to clear the other lines. We have cut it at the point indicated and also at the paper mills office, touching one side to ground, and we got a good spark. When this line is cut into at our office, by touching one side and the ground, we get a shock. Another line which ends a block from the central office is very bad. Where our lines cross the electric light lines they do so diagonally, with twenty feet to clear. Making the circuits metallic cut the noise down about fifty per cent, but it is still very bad. Noise seems to be increased on the longer lines. We have tried taking out the fuse plug on all the transformers, but it did no good. Cutting the electric line at XX on the diagram, cut the noise out entirely. Any explanation you can give us will be greatly appreciated.

A McClure system is usually immune from the bad effects of electric light induction. Why not try to get along without a ground at your switchboard? A common return system does not need to be grounded. Putting in repeating coils would be like giving a suffering man morphine; it would fix him so he would not feel the pain, but the pain remains just the same, and it is always better to go to the source of the pain, after all. There is no question that if you cut the line at X and get a shock, it is reasonably sure that electrostatic induction effects are the cause of your trouble and are due to the electric light company. While the average test reveals no ground, this is not conclusive. There is a static strain, due to an artificial alternating grounded trolley line condition, which always plays havoc with even good metallic and fully transposed toll lines. The static strain comes from a leaky condition of the electric light circuits, and if they were cleared you would have no trouble. Try cutting out your exchange ground, and if this does not help, keep after the electric light people. It has been our experience that the electric light companies are to blame practically every time.

Detroit's Branch Exchanges.

From present indications the Home Telephone Company of Detroit has planned and is now building a thoroughly modern system.

The accompanying illustration shows a type of building that will characterize the three branches to be located in different parts of the city. All of the buildings were designed and the work of construction is being superintended by Stratton & Baldwin, architects. The East Exchange, now in process of construction, is located at the corner of Sylvester and Field streets, and will serve the eastern part of the city. The West Exchange, which is also in the process of construction at the corner of Lafayette and Dragoon streets, will serve the suburb Delray and the western part of the city; while the North Woodward district will be supplied from the North Exchange, which is being built at the corner of John R. and Bethune streets. The buildings are nearly two-thirds completed and the work is progressing at a very satisfactory rate. The exterior of the three branches is designed to conform with the Central Exchange build-

ing at the northwest corner of John R. and Madison streets. The material entering into the construction is cut stone, terra cotta and dark red brick. The interior fittings of all the buildings will be in harmony with the Central Exchange, which has previously been described in this publication.

Each of the buildings will have a large and commodious basement, to be utilized for heating appliances and for the general storage of telephone supplies. The first story will contain the battery and machine rooms, the executive office, and also the rest rooms and lockers for the operators. The entire second story will be given over to one large room, which will be utilized for the switchboard and terminal racks. Each of the buildings are located on their respective lots in a manner to provide for future additions. It is hardly necessary to state that the type of building adopted by the Home Telephone Company for its sub-exchanges represents the latest ideas in construction and arrangement, and the management takes great pride in the fact that they have already been taken as models for similar buildings that are being erected elsewhere.

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Simultaneous Telephone and Telegraph

By Frank M. Slough and M. E. Taylor

THE practice of using both sides of the telephone circuit for individual telegraph circuits has grown rapidly in the last few years, not only on account of the extra revenue secured by leasing the additional telegraph line thus secured, but also on account of the simplicity, reliability and great efficiency of this method.

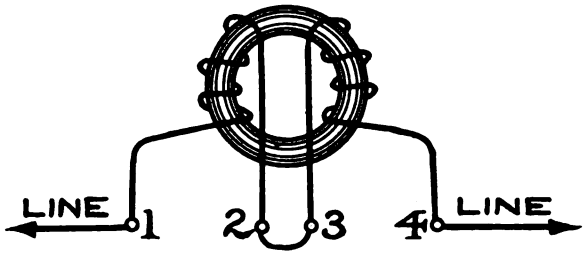

Figure 11.

As the success of this method depends upon the different resistances which impedance coils or condensers offer to alternating currents of different freqencies, the elementary principles governing such cases are here given.

If a direct current were flowing through a given coil the value of the current could easily be found by dividing the voltage impressed on the coil by the resistance thereof—this is called Ohm's law, and is expressed thus:

$$\text{Current } I = \frac{(\text{voltage})\ E.}{(\text{resistance})\ R.}$$

For instance, if we impress an electro-motive force of ten volts upon a coil whose ohmic resistance is fifty ohms, we find that .2 ampère of direct current will be forced through the coil.

However, alternating currents introduce a little variation into Ohm's law, and could not force nearly so much current through this coil, which is presumably wound upon an iron core, on account of a property or power called reactance, by which the coil opposes the electro-motive force of the alternating current.

This reactance is the effect of the inductance of the coil, expressed in henries, and varies according to the number of turns of wire, the amount of iron enclosed, the geometry of the magnetic circuit, and the frequency of the alternations employed.

These relations are expressed in the equation which follows:

Let L = inductance of coil in henries.
Let R = ohmic resistance of coil, in ohms.
Let Omega = 6.28 × cycles per second.

$$\text{Then current } I = \frac{E}{\sqrt{R^2 \times \omega^2 L^2}}$$

The denominator is the apparent resistance of the coil to the alternating current, and is termed its impedance.

For instance, we will suppose the turns of wire and the magnetic circuit to be such that the coil has a coefficient of self-induction of five henries, "also the frequency of alternating current to be employed to be 250 cycles per second; the ohmic resistance to be fifty ohms, as in the preceding example, using direct current." The current flowing would be found thus:

$$\frac{10 = \text{voltage}}{\sqrt{50^2 + (1571^2 \times 5^2}} = .00126 \text{ ampère}$$

Comparing this value of current with the previous one found by using direct current through the same coil

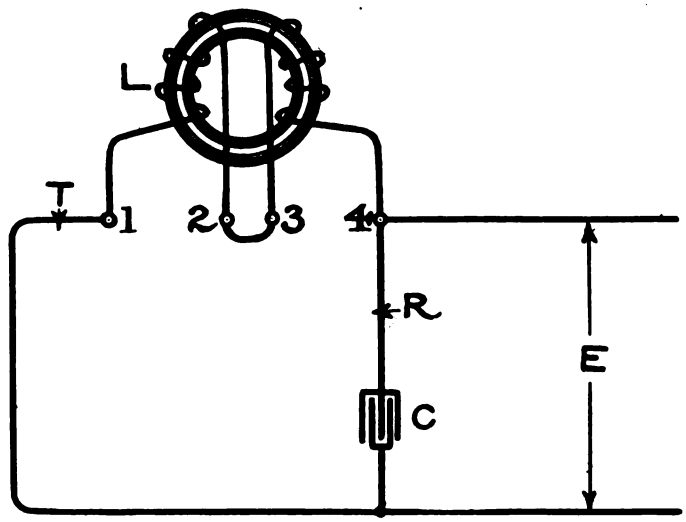

Figure 12.

that while we can send .2 ampère of direct current through the coil, we can, with the same electro-motive force of 250 frequencies alternating current, only force about 1-1600 of that amount through it.

It can readily be seen, then, that as the voice currents of telephonic transmission are nearly all of a frequency above 250 frequencies per second, we have at our disposal, in the impedance coil, an "electrical sieve" which will allow the impulses of direct current for telegraphing to pass through freely, but which will offer a tremendous

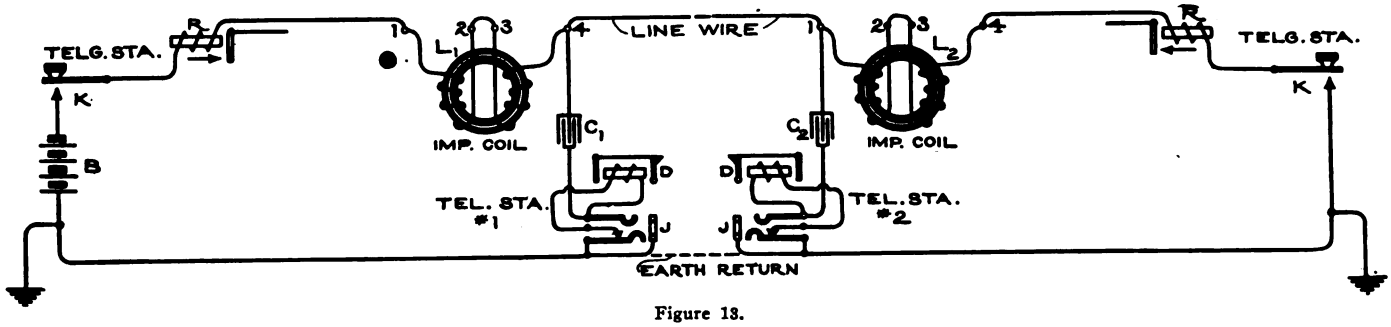

Figure 13.

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resistance to the flow of the high frequency currents used for the transmission of speech, also to the flow of the high frequency ringing current which is of necessity used in this system.

Now, as an ordinary impedance coil, in order to be of sufficient impedance to prevent the flow of high frequency currents, must necessarily change the character of the telegraph impulse, and in order to prevent this change from becoming excessive, and thus obliterating the message, these coils are wound, having two windings

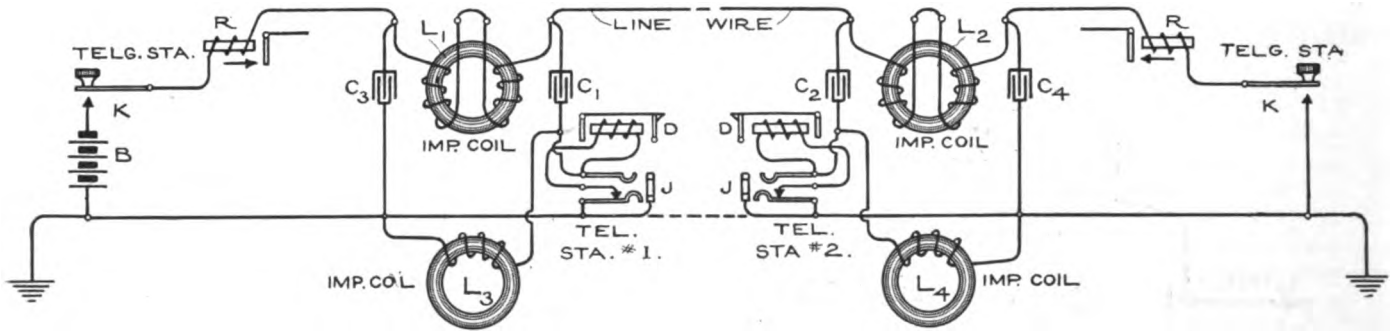

Figure 14.

which are equal in resistance and in number of turns. They are wound on the opposite sides of a ring-shaped core, and are connected in series but in opposition to one another, shown in Figure 11.

It has been found that for slow impulses of current, such as used in telegraphing, each winding neutralizes the effect of the other so the impulses pass through more freely, and with a very small change in character, thus insuring sharp and clear "dots and dashes," of which the message is composed.

However, for high frequency currents used for telephoning, this coil offers a high impedance, the two windings acting separately, as the length of the magnetic circuit between them has a greater reluctance to the high frequency lines of force.

As the condenser plays an equally important part in the operation of this system, the formula governing the amount of current flowing through a condenser are given.

Let C = capacity in farads.

$$\text{Current, I} = I = \frac{E}{\frac{1}{E \times C \times \omega}} = E \times C \times \omega$$

Expressing the capacity in microfarads (one millionth farad), we have, for the above equation:

$$\text{Current } I = \frac{E \times C \times \omega}{1{,}000{,}000}$$

If C were a 10 m. f. condenser, E being ten volts, and the frequency were 250 frequency per second, giving omega a value of 1571, we can readily find the value of current flowing.

$$\text{Current} = \frac{10 \times 10 \times 1571}{1{,}000{,}000} = .156 \text{ ampère.}$$

$$\text{Apparent resistance or reactance} = \frac{E}{I} = \frac{10}{.156} =$$

64 ohms.

Now if the coil previously described be placed in multiple with this condenser we would obviously, have a divided circuit, one branch of which would offer a resistance of 7,900 ohms, and the other only 64 ohms to the flow of the 250 frequency alternating telephone current:

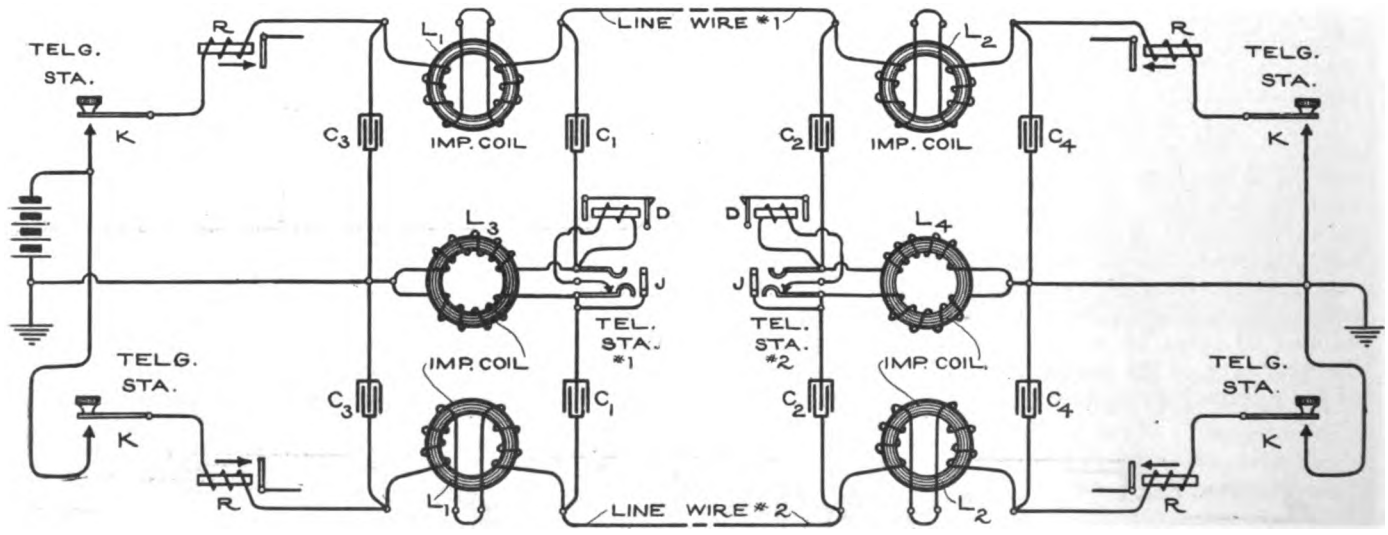

Figure 15.

in other words, almost all of the alternating current would flow through the condenser. But, on the other hand, it is plain that all of the direct current such as used in the telegraph system would flow through the coil. Figure 12.

From this, if we wished a telegraph instrument to respond to the direct current impulses, it is obvious that if placed at T it would do so. Also an instrument placed at R in the condenser circuit would only receive the alternating current. This is the basis of the composite system and, with a little variation, proves to be as efficient in practice as it is in theory. Figure 13 shows how this

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principle is applied to the problem of simultaneously telegraphing and telephoning over the same wire, in which T1 and T2 are the telegraph relays operating from a battery or other source of direct current power, *B*, through the impedance coils L1 and L2 and the line wire, the ground being the return circuit.

J1 and J2 are the telephone jacks on the opposite ends of the line, and are connected in series with the condensers C1 and C2, using the same line wire and earth return as the telegraph stations.

According to the principles already stated, a person with a telephone connected at J1 can converse with another at J2 and at the same instant the telegraph operator at T1 may be sending a message to the operator at T2

However, the telegraph impulses would probably be noticeable, because of the fact that when the telegraph key is released, thus breaking the telegraph circuit, the coils discharge, and it is this terminating sharp impulse that would be heard in the above case. However, condensers placed in the circuit, in the manner shown in Figure 14, as C3 and C4, discharge at the same instant as the coils, but in opposition to the inductive discharge and neutralizing the effects thereof.

The condensers used in the circuit as before described, vary in capacity, according to the constant use in the way of coils, lines, etc., but a high value is preferable—eight to ten microfarads giving good results. As a general thing, more harm can be done by using too small condensers than those of too great capacity.

By the use of the condensers and impedance coils we have flattened the telegraph current impulse so that it assumes such a character that the rate of change of its instantaneous values is below the lowest audible sound.

As in Figure 13, it is possible for a high difference of potential to exist across the terminals of the telephone circuit, when the telegraph circuit is being used, and as the inevitable tendency toward equilibrium would cause this difference in potential to cause impulses of current to flow through the receiver. Impedance coils L3 and L4 are placed in the circuit as shown in Figure 14, and carry these impulses to ground instead of allowing them to affect the telephone circuit.

We now have a telegraph circuit over which a direct current will flow to operate the telegraph relays for the transmission of telegrams, and also over this same wire, and at the same time we have available a telephone circuit operating the ordinary telephone instruments, each circuit absolutely independent of the other.

We have up to this time considered the line to be of the single wire, ground return type, which is becoming obsolete so far as Independent toll lines are concerned, and which gives us but one telegraph circuit.

It can easily be seen that if instead of using the ground for the return of the telegraph circuit, we use a metallic telephone line we have available another ground return telegraph line constructed in the same manner as the first, and operating over the second line wire and ground.

This condition is clearly shown in Figure 15. The impedance coils L1 and L2 of telegraph circuit, number two being wound upon the same core as the similar coils of telegraph circuit number one, their common wire being connected to ground. Thus a difference of potential due to a positive impulse on the first wire and a negative on the second will become neutralized through the coils and will not affect the telephone circuit.

It is evident that in order for an operator to operate the telephone signal at the distant station, an alternating current of extremely high frequency must be used, otherwise the telegraph service would be disturbed, at such times, by the current flowing through the telegraph instruments and obliterating the telegraph message.

Decline of the Bell Trust

By D. A. Reynolds

WHEN a great organized industry, possessing all the elements of a public necessity and fraught with great inherent profit, passes into a decline, the general public is apt to become incredulous, while financiers are searching for the underlying causes.

Probably no industry was ever created in America that possesses the inherent profit of the telephone business, and certainly no industry was ever more thoroughly protected by the government as a monopoly through its patent office, which has since been supplemented by some of the states, perpetuating that monopoly until the present time, through legislative enactments secured under conditions that would call for the strictest investigation in any other branch of industry.

It is well known that during the entire seventeen years of governmental protection the monopoly succeeded in the installation of but little more than a quarter of a million telephones, indicating that its policy was thoroughly inadequate to the requirements of the public, as the development in the last ten years under competition has increased the use of the telephone more than 2,800 per cent, notwithstanding the claim on the part of the Bell Company that "two telephone systems are a public nuisance."

Whatever criticism there may be offered upon the relations existing between this monoply and the public, the internal arrangements were even more reprehensible. The policy adopted was narrow and selfish, domineering and arrogant, and well designed to disgust the public and thoroughly undermine the very foundation of its existence. Centralized in what was known as a "parent company," invincible because of its patent monopoly, the central organization created seventy-two operating companies from which it demanded and received a large proportion of capital stock, varying under different conditions, but substantially controlling the auxiliary companies by reason of stock holdings, or rigid contractual relations. In addition to this large stock holding, it exacted a royalty upon the instruments, switchboards and other appliances, such royalties continuing long after the basic patents expired and when the parent company could no longer extend the hand of protection to its subsidiary or operating companies. Later, this obnoxious royalty provision gave place in some instances to a "percentage of gross receipts" in which the parent company drew from its subsidiary companies a certain percentage, amounting in one instance at least, that of the Southern New England Telephone Company, as shown by the testimony of President Tyler, to a fraction over twenty-eight per cent of its net earnings.

Bad as this old policy may appear, it is magnanimous as compared with the policy adopted by the parent company within the last three years, or since the business has been dominated by Union N. Bethel, for-

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merly manager of the New York Telephone Company, but now in practical control of the thirty-two auxiliary companies yet remaining to the telephone trust.

Formerly, the policy of the so-called telephone trust was promulgated from Boston over the signature of Frederick P. Fish, president, conceded to be one of the brightest minds ever in control of the affairs of the company. This policy, however, was limited to the judicious management of the American Telephone & Telegraph Company (long-distance), which later absorbed the "parent company" when it was found that the legislature of Massachusetts refused to allow the parent company to inflate its capital out of proportion to its legitimate earnings, but did not extend, as at present, to the dictation of the affairs of the auxiliary companies.

In New York, the Metropolitan Telephone Company, later known as the New York Telephone Company, was dominated by Charles F. Cutler, a man possessing a strong personality and whose influence was felt not only in his own company in New York, but in several of the subsidiary companies drawing more or less of their capital from New York City.

These two master minds have grown old in the service of the corporation and are now, to a very great degree, enjoying the respite they deserve, their mantles falling upon the shoulders of Union N. Bethel, who has risen, by consistent perserevance, from a subordinate position to that of the dominating mind of the trust at the present time. For seven years Cutler has taken his gospel from Bethel, who in effect was in absolute control of the affairs in the metropolis. For four years, it is claimed, that Bethel tried to secure the same ascendency over Fish as he had acquired over Cutler, but without success. Finally, a very elaborately printed copy of an argument by Bethel, before the telephone committee at Albany, attracted the attention of the Boston magnate and Fish fell a victim to the sophistry of Bethel. Today the monopoly is dominated by Frederick P. Fish, Charles F. Cutler and Union N. Bethel, while the two former are dominated by the latter. As a result of this policy Bethel has acquired an "exaggerated ego" in the execution of a policy which is already making itself felt in financial circles.

Acquiring the absolute control of the remaining thirty-two subsidiary companies, Bethel has crowded to the rear the men responsible for the success of these companies, placing himself in the position of president and engendering a feeling of resentment on the part of those to whose acumen may be attributed whatever degree of success there may have been attained in the several localities.

Within the last year, J. C. Reilly, the moving spirit in the New York & New Jersey Telephone Company, has been relegated to the rear, while Union N. Bethel has been promoted to the office of president. In Washington Horace F. Cummings, who built up the Chesapease & Potomac, has been shorn of his laurels and again the name of Union N. Bethel appears as president. The directorate of the Bell Telephone Company of Philadelphia shows Union N. Bethel, president and director; Central New York Telephone & Telegraph Company, Union N. Bethel, president and director; Deleware & Atlantic Telegraph & Telephone Company, Union N. Bethel, president and director; Empire State Telephone & Telegraph Company, Union N. Bethel, president and director; New York & Pennsylvania Telephone & Telegraph Company, Union N. Bethel, first vice-president and director; Northeastern Telephone & Telegraph Company, Union N. Bethel, president and director; and so on to the end of the list. In Albany, a similar condition exists, Cutler acting as chairman of the board of directors and Bethel again appearing as president, a position not at all enviable in view of a deficit of $48,321 in 1905 and $63,177 in 1906. The internal resentment was well expressed by Mr. O. N. Nicholson, who appeared before the trustees of Peekskill, when he replied to an inquiry that he "must admit that the Bell companies had treated the people shamefully, but that they were under the dominition of the Boston concern and had been *bled to the bone.*"

In like manner, Bethel at the present time is the dominating spirit and practical head of about twenty-five of the thirty-two subsidiary companies of the telephone trust, confronted with over 7,000 active Independent telephone companies, composed of stockholders of more or less local influence. In fact, he has spread himself so thin over the diverging lines of the octopus that his influence has become thoroughly negative in character. His policy to crush out competition is about as effective as the bellowing of a bull in a nest of hornets, and he appears powerless to originate a policy effective in the preservation of what remains of this once all-powerful monopoly.

The effect of such management is clearly shown in the financial history of the company, quite clearly set forth in the letter addressed by Frederick P. Fish, president, to J. P. Morgan and associates, under date of January 26, 1907, in reference to the company's last bond issue, from which we compile the following statistics:

Amount of authorized capital stock	$250,000,000
Stock outstanding in the hands of the public	131,551,400
Collateral trust bonds due July 1, 1929 (sold or hypothecated)	78,000,000
Convertible bonds due March 1, 1936, authorized	150,000,000
The same recently offered by J. P. Morgan and associates	40,000,000
Bonds assumed, due July 1, 1908 (old A. B. T. bonds)	10,000,000
Notes due May 1, 1907	20,000,000
Notes due January 1, 1910	25,000,000

In conjunction with these figures, it should be stated that these mountains of liabilities, with the exception of the long-distance lines, rest almost entirely upon the thirty-two remaining subsidiary companies, many of which are practically bankrupt if measured by the ordinary rules of business. The Hudson River Telephone Companys last report shows a capital stock of $3,909,900 and "bills and accounts payable" of $4,399,482.37, while its deficit last year was over $63,000, as against $48,321 the year before. The Michigan Company went into the hands of a receiver with over $8,000,000 liabilities, the Erie was wiped out with over $10,000,000 of liabilities, while the stock of its reorganized successor is offered at $8 a share.

In Washington, where Col. Horace F. Cummings built up the Chesapeake & Potomac from nothing to prosperity, the Bethel *regime* is nursing a floating indebtedness said to be over $6,000,000, mostly all loans, while the Central of New York state is practically in the same predicament, with a deficit during 1906 said to be over $100,000. Thus could be analyzed the foundation of these fabulous sums, were it possible to secure annual statements. There is enough, however, to account for the decline of over $68 a share in the last five years, while the New York *Times'* annual financial report shows but a single transaction on the New York stock exchange during the entire year 1906.

It is hardly necessary to refer to the delay from March 1, 1906, to January 30, 1907, in the marketing of the company's recent bond issue, but the fact that it was forced, during that time, to borrow on notes $20,000,000

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under date of May 1, 1906, and $25,000,000 under date of January 1, 1907, the latter sum at a rate said to be 16 per cent, shows that the once powerful monopoly has reached the age of senility, and that the Telephone Gulliver is fast succumbing to the 7,000 Independent Lilliputians.

If nothing further is necessary to determine the future, from the commissions and omissions of the past, a reference to the recognized and systematized corruption of the servile press and the open defense of indicted public officials will determine all right-thinking people, while those who investigate Bell securities will find that it is itself the victim of the course it pursues with others. In the great city of New York, where public officials are more exacting than in any other city in the world, the company has built up a mammoth extortion represented by nearly $100,000,000 of capital stock, without the semblance of franchise rights.

Fortunately for it, the people of the metropolis must have telephone service, and as long as the Bell can delay the installation of a system upon franchises already secured and now quite fully adjudicated, so long can it defy the city and continue to mulct its citizens by extortionate rates. It recognizes, however, that the day of reckoning is near at hand and it is already trying to forestall the inevitable by securing, at this late day, a limited franchise for twenty-five years, for which it has offered the city of New York over $9,000,000 in cash and rebates.

The bottom of the financial sea is full of the hulks of gigantic trusts, which have been sunk by the natural torpedoes of competition, but never in the history of business has there ever existed so vulnerable a craft menaced on every side by over 7,000 hostile vessels, every one of which is armed with public approval and local pride.

Wisconsin Annual Telephone Convention

THE annual meeting of the Independent Telephone Association of Wisconsin met in adjourned session at Turner Hall, at Madison, Wis., March 7 and 8, 1907.

The meeting was called to order by President Valentine at 3:15 p. m.

Mr. Mohlenpah, president of the first district, reported a meeting of fifteen companies having been held at Janesville, and representing 700 telephones outside of Racine, in the first district, organized with by-laws similar to those of the Indiana district association, with some changes. A committee on toll line connections was appointed, and Mr. Grant of Janesville was elected secretary and treasurer.

John S. Donald, president of the second district, reported that his district represented fourteen companies with 27,500 telephones, and that the organization was only recently completed. Good feeling prevailed and a large and growing interest was shown in favor of Independent lines.

E. J. Kneen, president of the seventh district, reported perfected organization, which is enthusiastic, with seven to ten thousand telephones represented in the district.

W. L. Burch announced he was the only one present at a district meeting called for the third district and he affiliated with the second district. He suggested that the third congressional district should become a part of the second and seventh congressional districts for practical reasons.

Capt. John M. Baer reported for the ninth district that a meeting was called for February 18 and 19, but was adjourned to meet on March 12, on account of sickness and business reasons.

E. I. Bates reported for the tenth district that a meeting had been held at which five companies were represented. By-laws were adopted and the district permanently organized, with 3,025 Independent telephones represented in the district, and conditions will be much improved.

Group of Delegates Attending Annual Wisconsin Independent Telephone Convention.

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President Valentine announced the illness of H. D. Critchfield, and that Mr. Chapin of Milwaukee, a director of the Milwaukee Independent Telephone Company was present to represent Mr. Critchfield. Mr. Chapin reported the excellent progress of the Milwaukee Independent Telephone Company's preliminary work, and that through the aid of solicitors 5,200 contracts had been obtained for telephone service; that 2,700,000 feet of conduit had been ordered shipped to Milwaukee and that construction would begin as soon as it was physically possible.

W. J. Stadleman, the traveling secretary of the International Independent Telephone Association of America, was present and addressed the convention.

President Valentine announced that proposed legislation demanded attention of the association. Mr. Crowley, Jr., moved that a committee of three be appointed to draft specifications covering the crossing of wire over railroad crossings (the purpose to govern the members of this association in the construction of such lines), and that this committee be instructed to confer with other interested persons in the matter. The president appointed as such committee Messrs. Crowley, Harper and Teasdale.

Mr. Harper moved a committee be appointed consisting of one from each district to meet and arrange a uniform set of district by-laws. The president appointed as such committee Messrs. Grant, Donald, Schweizer, Crowley and Bates. Mr. Crowley moved that a session be held in the evening for the purpose of discussing exclusively the proposed pending legislation and to accept an invitation from Mr. Harper to a "smoker" afterward, which was carried.

The evening meeting was called to order by President Valentine. The following permanent committee on legislation was then appointed by the chair with power to act: Messrs. F. C. Grant, J. C. Harper, Richard Valentine, R. S. Donald and C. H. Schweizer.

It was moved and seconded that Bill 205 A, regarding the setting of poles, be referred to the legislative committee; also that Bill 298 A, regarding the granting of franchises, with Bill 506 A, regarding the taxing of property not used exclusively for telephone purposes, and that Bill 666 A, regarding the stringing of wires and cables over private property, all be referred to the legislative committee.

Many other bills were discussed, after which the meeting adjourned to Friday, March 8, 9:30 a. m.

At 11 a. m., March 8, 1907, the meeting was called to order by President Valentine.

Mr. Schweizer moved that those companies represented at the meeting leave maps and data with the secretary for the use of the Milwaukee company, and that the Milwaukee company be asked for assurances of its immediate construction of lines.

The committee on specifications for wires across railroads then reported recommendations as follows, which were adopted:

SPECIFICATIONS FOR CONSTRUCTION OF SPAN OF POLE LINE CROSSING ANY RAILROAD.

Poles.—That the said pole on each side of the main right-of-way shall be firmly set and shall be placed more than 125 feet apart; and in case said right-of-way shall be of a greater width than 125 feet, poles shall be placed upon said right-of-way at such distance as shall not exceed the said span of 125 feet.

Brackets.—Upon said pole line carrying two wires or less, a bracket may be securely fastened to the pole upon each side thereof.

Cross Arms.—Upon each pole line carrying more than two wires a standard telephone cross-arm and pins shall be securely placed upon each side of said pole, and the same shall be securely bolted at each end thereof.

Wires.—That each span of wire crossing said railroad shall be at least 25 feet above the top of each rail of said railroad, and each wire shall be securely fastened to its line insulators with tie-wires, upon each double bracket or double cross-arm.

Guard Wire.—There shall also be placed a No. 8, or larger guard wire running from one end of said cross-arm over said entire lead of wires to the other end of said cross-arm.

Mr. Donald reported for the nomination committee as follows: Your nomination committee respectfully recommends the election of the following named gentlemen as officers of this association for the ensuing year: President, H. D. Critchfield, Milwaukee; vice-presidents, the presidents of the district associations; secretary, J. C. Crowley, Jr., Superior; treasurer, J. S. Donald, Mount Horeb. Executive Committee—The president and secretary, *ex-officio;* John M. Baer, Appleton; Richard Valentine, Janesville; J. C. Harper, Madison; Dr. G. N. Hidershide, Arcadia; H. Teasdale, Sparta; Wm. Van Middleworth, Racine; W. P. Hyland, Ashland.

Report was adopted and the above officers elected for the coming year.

Mr. Goodrich reported for the committee on constitution and by-laws, which was appointed in January. The report was adopted and will be printed in book form and mailed to each member of the association as soon as expedient.

The committee on by-laws for district associations and uniformity of same reported and the report was accepted and will be printed with the by-laws for the state association.

A resolution was adopted amending Article 7 of the said by-laws by adding:

"Any individual member of an Independent operating company may become a member of the association in the same manner as specified above, and by paying a membership fee of one dollar, and one dollar per year dues."

The secretary was then instructed to cast the ballot for the following applications for membership in the association, and the following were duly elected members of this association:

The Milwaukee Independent Telephone Company, Milwaukee, Wis.
The People's Telephone Company, Superior, Wis.
Pine Bluff Telephone Company, Riley, Wis.
Mt. Vernon Telephone Company, Mt. Vernon, Wis.
E. J. Bates, Chippewa Falls, Wis.
J. C. Crowley, Jr., Superior, Wis.
W. P. Hyland, Ashland, Wis.
L. Richardson, Chippewa Falls, Wis.
Dr. Geo. W. Hidershide, Arcadia, Wis.
B. J. Anderson, Sun Prairie, Wis.
H. Teasdale, Sparta, Wis.
W. H. Burk, Sheboygan, Wis.
Geo. Byer, Westby, Wis.
H. J. Stadleman, Sioux City, Iowa.

The following resolution was presented and adopted:

Resolved, By this association, that it respectfully requests the Independent Long Distance Telephone Company, now incorporated, to proceed at once with the preliminary work for the immediate installing of first-class toll line connecting up the different Independent telephone companies representing more than 60,000 telephones.

The following resolution was also adopted:

Whereas, It has been reported that the Great Northern Railroad Company is discriminating against Independent telephone interests in Wisconsin, Minnesota and points along its system, and that such discrimination is unfair, unjust and detrimental to Independent telephone interests of the United States. Therefore be it.

Resolved, That we protest against such discrimination, and be it further

Resolved, That a copy of this resolution be furnished to the Independent telephone journals, the International Independent Telephone Association of the United States, the manufacturers of

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Independent telephone apparatus, appurtenances and supplies, and that the said association and manufacturers be appealed to to use their influence with said Great Northern Railroad Company to the end that it cease this discrimination, and be it further

Resolved, That a copy of this resolution be sent to the railroad commissioners of the state of Wisconsin and Minnesota; to J. J. Hill and to L. J. Hill of the Great Northern Railroad Company.

It was then moved and carried that an assessment of 1 per cent per unit be assessed against each company.

A resolution was presented thanking the retiring president and secretary for the valuable work done by them in faithfully performing their duties, and especially to thank President Valentine for his many years of service in the office of president, and the same was adopted by a rising vote.

A unanimous vote of thanks was also tendered to Mr. Harper for the faithful work performed by him for the association.

A vote of thanks was also tendered Mr. Harper and the Madison people for the success of this convention.

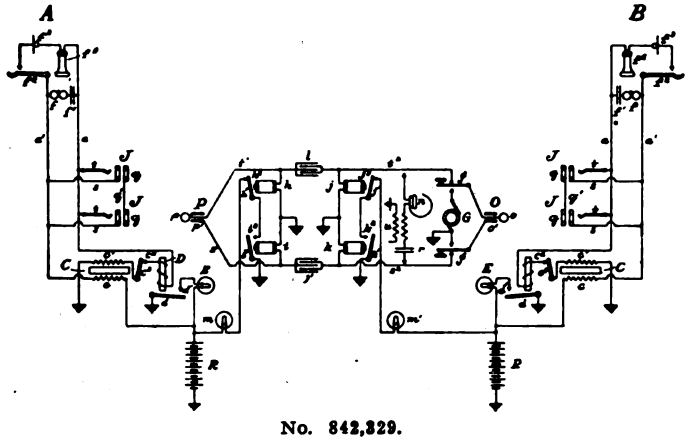
Mr. Valentine then responded in closing remarks and the convention was adjourned.

Recent Telephone Patents

By David S. Hulfish

842,178. Telephone Trunk Circuit.—Dean. This is a two-wire trunk circuit for reverse-call method of operation. It is designed to work with a two-way plug into a two-wire multiple, and accomplishes the usual signaling conditions, but without any ring-through feature. The B-operator is required to do the ringing, and gets a ringing lamp until the called line answers. The answering of the called line is relayed in the B-end of the trunk to control the supervisory signal at the A-end of the trunk. A disconnect lamp at the B-end of the trunk is lighted upon the withdrawal of the plug from the jack at the A-end of the trunk. Each of the connected lines receives transmitter current from its home office; the trunk thus is adapted for use between offices widely separated.

842,306. Telephone System.—Dunbar. A two-way cord pair with three-wire multiple. Transmitter current is fed to the line through one winding of the cut-off relay C, returning to earth through the supervisory relay of the cord pair. A point worthy of note is

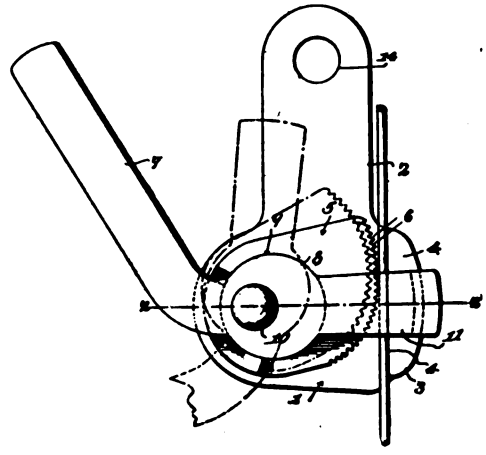


No. 842,329.

that no relay coils or contacts are talked through; all coils are in bridge, and the only contacts, either in the talking conductors or in the current-feed conductors, are the contacts between the plugs and jacks.

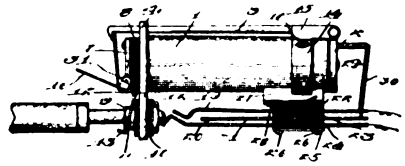
842,329. Wire Grip.—McClean. This comealong shows an improvement over the usual type of fixed-jaw and cam jaw comealong by providing an arm which swings close over the fixed jaw and keeps the wire in place while the cam jaw is getting a good grip on it.

842,377. Signaling Apparatus.—Atwood. Assigned to Western Electric (Bell) Company. The claims of this patent are directed toward a portable telephone equipment, weather proof and insectproof. For instance, the gravity switch, corresponding to the hook switch of the ordinary telephone, is enclosed by a flexible rubber cover; the weight of the receiver operates the switch by pressing against the rubber and thus pushing a rod inside which operates the switch.



Nos. 842, 329.

842,409. Combined Drop and Jack.—Mehren. The drop and jack are mounted upon a single face plate. A lever pivoted between its ends is adapted to engage the shutter of the drop at one end and the body of an inserted plug at the other end, thus restoring the drop by the insertion of a plug.



Nos. 842,409-842,410.

842,410. Combined Drop and Jack.—Mehren. The device is as in 842,409, the claims being directed to the construction in which a ring encircles the opening of the jack.

842,565. Annunciator.—Kusel. The object is the ready removal and replacement of the winding or helix of a switchboard drop. To this end, the case and core for the spool are made a fixed part of the structure, and the helix of wire, wound on a tube, is slipped over the fixed core. A latch is provided to catch and hold the helix in place, and a spring is provided to start the helix from its position when the latch is pressed to release the helix.

842,771. Binding Post.—Cove. A spring clip designed to screw upon the screw stud of a dry battery

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terminal and to grip a connecting wire with facility.

842,772. Party Line Telephone System.—Dean. This is another of a group of patents now issuing upon the selective signaling bells of the harmonic system used by the Dean Electric Company.

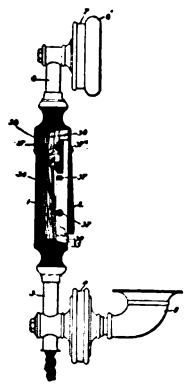
842,788. Telephone Exchange System. Fox. An intercommunicating telephone system wherein the station desired is called by a push button on the instrument at the calling station.

842,822. Telephone System.—Turner. A party line system, having a step-by-step movement of a dial with an adjustable contact, a hand generator being provided at each station for providing energy for the system.

842,941. Insulator.—Clark. An insulator designed for high insulation and for great mechanical strength to resist mechanical strain from the wire.

842,942. Insulator.—Clark. An insulator for heavy wires combining in its structure a clamp for the wire held.

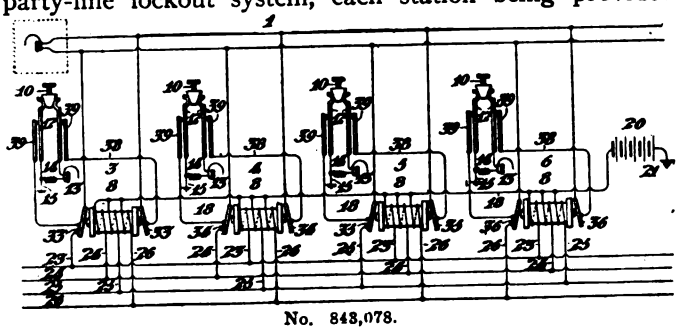
843,053. Telephone Switch.—Weman. A detail of switch in the handle of a microtelephone, or combined transmitter and receiver. Such an instrument



No. 843,053.

may be used without a hook upon which to hang it; the hookswitch of the usual telephone therefore is placed in modified form in the handle of the microtelephone and is operated automatically by the grip of the hand while the microtelephone is in use.

843,078. Telephone System.—Eaton. This is a party-line lockout system, each station being provided



No. 843,078.

with means for locking out all other stations from the line. A battery per line, a relay per station, and several extra locking wires between stations are required above the usual talking conductors of the line and telephone equipment of the stations. It seems adapted for intercommunicating branch exchange systems.

843,186. Telephone Dictating Device.—Turner and Germer. This patent pertains paticularly to circuits involved in a system designed for commercial offices to enable stenographic dictation to be done by telephone.

843,245. Trunking System.—Webster. A trunk circuit adapted to trunk between a magneto toll board and a two-wire common battery multiple switchboard.

843,283. Electric Signal.—Krum. A single-coil polarized biased bell.

843,296. Telephone Repeater.—Parcelle. Again we have the magnetic field with the receiving winding varying its strength, and with mechanical transmission of the energy to a granular carbon button, but in this instance the magnetic poles of the receiving device are hinged to swing together and the carbon button is pressed between them. The varying strength of the magnetic field, due to speech waves, varies the pressure upon the carbon button. A one-way repeating circuit is shown, and the claims are directed to the mechanism only. The application dates back to 1900.

843,329. Intercommunicating Telephone System.—Dean. A common battery intercommunicating system using a three-wire line and ringing by the common battery over the third wire. The illustration showing the circuits is so clear as to waive an explanation in this text.

843,362. Telephone Attachment.—Plank. An attachment for mouthpieces comprising a series of concentric linings of antiseptic paper.

843,414. Reading Device for Electrical Instruments.—Northrup. A telescope attachment for portable voltmeters, etc., operating with a small mirror on the moving system and a scale within the instrument case.

843,871. Telephone Trunking System.—Dean. A trunk for two-wire multiple common battery system. Plug and jack terminals are provided at both ends and a cutoff relay associated with the jacks operates to cut off the plug equipment at that end when the plug is inserted in the jack.

843,890. Connection for Acousticons.—Haff. A system of connecting together a number of the devices to increase the transmission.

No. 843,916.

843,891. Receiver.—Haff. The claim is directed toward readily attaching a receiver cord to a receiver, and the drawing shows an operator's head telephone.

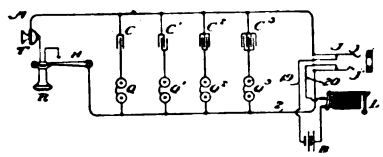
843,916. Insulating Saddle Staple.—Taylor, Jenks and Dyer. The saddle is of folded sheet material and the legs of the staple pass through one sheet of the material.

843,930. Fuse.—Cook. In a tubular fuse an asbestos cord is drawn into the tube with a fuse wire, thus filling the tube full and leaving practically no air space around the fuse wire.

843,998. Hook switch.—Cadden. The claims are directed toward specific arrangement of the contact group and of the actuating lever and its spring.

844,034. Coin Collector.—McBerty. A detail of improvement in the well known Bell coin box.

844,083. Support for Telephones.—Barrella. This is a device of the swinging arm type, to hold a desk stand conveniently.



No. 844,257.

844,257. Harmonic Signaling.—Dean. This patent is directed toward the combination of tuned ringers with

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varying sizes of condensers and varying voltages of ringing current sources.

844,299. Telephone Attachment.—Challen. A device for attachment to the earpiece of a receiver to reduce the air space of the total sound chamber, and to confine the sound waves and conduct them to the ear of the listener.

844,354. Pulling Box for Conduit.—Hawkinson. A means of access to a normally closed conduit, and for reclosing the conduit.

844,506. Telephone Trunking System.—Dunbar. A reverse-call double-track trunk providing the usual signaling facilities between common battery offices.

844,641. Cable Riding Car.—Yeakel and Ireland. The novelty lies in means for propelling the car, which is by crank connected through chain gear to the wheels.

844,722. Receiver Support. Heisch. A device of the class of telephone attachments for holding the receiver in position for use, leaving both of the hands of the user free.

844,796. Insulator.—Hatchett. An insulator of the tieless or self-tying type. The wire is placed in a tortuous slot.

844,811. Telephone Busy Signal.—Kitsee. This is a substation device for party lines, and is designed to show a "Line Busy" target at the substation telephone when the line is in use.

844,839. Telephone System.—Whitehorne. A system of central office devices and circuits whereby a common battery substation may signal through the central office cord pair and produce an audible signal at the distant connected station, if that receiver be off the hook, without the co-operation of the central office operator.

844,949. Telephone Attachment.—Macgill. A sanitary screen in front of the transmitter mouthpiece, and means for holding a roll of the screen material.

845,010. Electrical Protective Apparatus.—Rolfe. A combined carbon arrester and heat coil device of the usual type for large protector racks. The claims are upon circuit details.

845,056. Telephone Circuit.—Corwin. The patent covers a substation circuit, and uses a low-resistance impedance as a direct shunt to a high-resistance receiver, whereby a condenser in series with the receiver is not required.

845,062. Transmitter.—Dempsey. A granular carbon button has its front electrode solidly fixed, and has a diaphragm connection through levers whereby the compression of the carbon granules is caused by the return stroke rather than by the direct stroke of the diaphragm in response to a sound wave.

845,077. Telephone Trunk.—Goldrick. A double-track trunk between common battery multiple offices, with usual signaling conditions, and requiring the B-operator to ring manually.

845,111. Collector.—McQuarrie. The coin has two successive positions, controlling separate switch contacts for signaling purposes. One polarized magnet controls the coin, in either position.

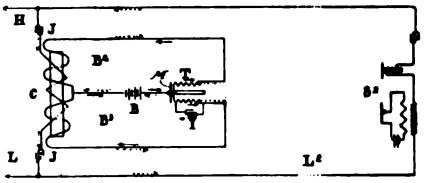
845,112. Coin Collector. McQuarrie. Same as 845,111, but with two polarized magnets.

845,157. Composite Circuit.—Yorke. Assigned to Bell interests. A full composite, forming two telegraph circuits and one telephone circuit from a pair of line wires. The claims are on specific apparatus arrangements.

845,219. Heat-Coil Device.—Cook. A thermal protector consisting of a heating element supported conductively at one terminal and being cemented into conductive contact with a spring element at the other terminal, the cement used being insulating and heat susceptible.

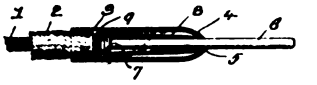
845,268. Spring Terminal Clip.—Schade. A modification of the Fahnestock binding post and assigned to the Fahnestock company.

845,282. Repeater Circuit.—Warth. This circuit is illustrated herewith. It is a radical departure from preceding practice on this line.



No. 845,282.

845,288. Telephone Tip.—Barker. The projecting pin of the telephone tip is swiveled, thus avoiding annoying twisting of the flexible conductor.



No. 845,288.

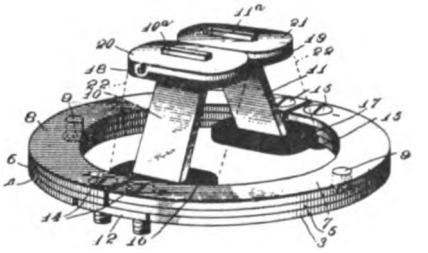
845,328. Lockout System.—Boone. The hook-switch, not the hook lever, is locked if the line is busy. Assigned to the Peru (Ind.) Common Battery Lockout Telephone Company.

845,370. Coin Collector. McBerty and McQuarrie.—A coin put in the box to call central may be manually taken back by the subscriber if the operator does not answer. Assigned to Bell interests.

845,452. Trunk Circuit.—Dunbar. A double-track trunk between common battery offices. The usual signaling requirements are approximated with a minimum of apparatus in the trunk.

845,533. Telephone System.—Dean. The claims are directed toward a testing relay which cuts off the test-plug tip from the cord pair while in use for testing.

845,546. Telephone Magnet.—Harrison and Haslett. A circular arrangement of magnets and pole pieces for operator's head telephone.



No. 845,546.

845,703. Telephone Directory.—Napp. An arrangement of indexed leaves for quick reference to a selected telephone list.

West Virginia Convention Date.

The second annual meeting of the West Virginia Independent Telephone Association will be held in Wheeling, May 9 and 10. The time and place was decided at a recent meeting of the executive committee of the association held at Parkersburg. The meeting will be held on the second anniversary of the organization of the association. The object of the association is to connect all the Independent lines in the state. The officials of the sixty companies are members of the organization.

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A Study of Telephone Generators

Showing a Comparison Between Electrometer Methods and the Use of the Oscillograph in Determining the Voltage, Current and Wave Forms of Various Machines

By G. W. Wilder

THE voltage of any generator depends upon the rate at which the lines of force due to the magnetic field are cut by the wires of the revolving armature. This rate, in turn, depends upon the area of the pole pieces and the intensity of the field; the number of turns of wire on the armature and the speed of the latter. The theoretical value of the voltage may be determined when these quantities are known, providing the proper units are used. When the area of the pole pieces and the intensity of the field are given in square centimeters then the rate at which the line of force is cut, divided by one hundred million, will give the electromotive force in volts. This is expressed by the following equation:

$$\text{Voltage} = \frac{A \times H \times N \times 4 \times R}{100{,}000{,}000}$$

A is the area in square centimeters, H is the number of lines of force per square centimeter, N is the number of turns of wire on the armature, and R is the number of revolutions of the latter per second. The factor 4 is introduced, because a closed loop, such as is formed by one turn of the armature wire, cuts all line of the field four times each revolution. The large factor in the denominator is used on account of the relation existing between the volt, which is the practical unit of electrical pressure, and the scientific unit, which is very small.

In order to design a telephone generator of the magneto type that will produce a large voltage, it will be seen that one must endeavor to make the quantities in the numerator of the above equation as large as possible. This has been done by the various manufacturers in several ways, although, as we shall see, many considerations limit the degree to which these values may be increased. The area of the field can be made as large as desired, although, of course, the larger it is, the more bar magnets will be required and hence the more expensive the machine. The weight sometimes forms an important item and in this case might be considered.

The intensity of the field depends upon the quality of the steel used in the bar magnets and also upon the grade of soft iron used in the pole pieces. It is found that the harder the steel the weaker the magnetic field, so in order to get an extremely strong field it will not do to temper the magnets too strongly. It is desirable that the magnets shall always retain their magnetism and never become weakened. In order that this shall be the actual condition it is necessary to temper them quite hard, for the softer the metal the more easily does it lose its magnetism. It is evident, then, that these two properties work against each other, and in order to obtain a strong, yet permanent magnet, a limit must be set to the tempering of the metal. Great improvement has been made in the past few years in the manufacture and treatment of magnet steel.

The number of turns of wire on the armature is necessarily limited on account of the size of the wire and the dimensions of the armature core. The size of the wire is limited by the fact that if it is too small the resistance becomes so large that very little current flows and it may be desirable to have the machine furnish considerable current.

The number of revolutions per second are almost and definitely determined by the fact that the ordinary person using a magneto generator turns the crank handle only about three or four times per second. In operating a gear attachment for increasing the speed of the armature, it has been found impractical to use a larger ratio than five to one; that is, one turn of the crank handle causes the armature to turn around five times. A larger gear

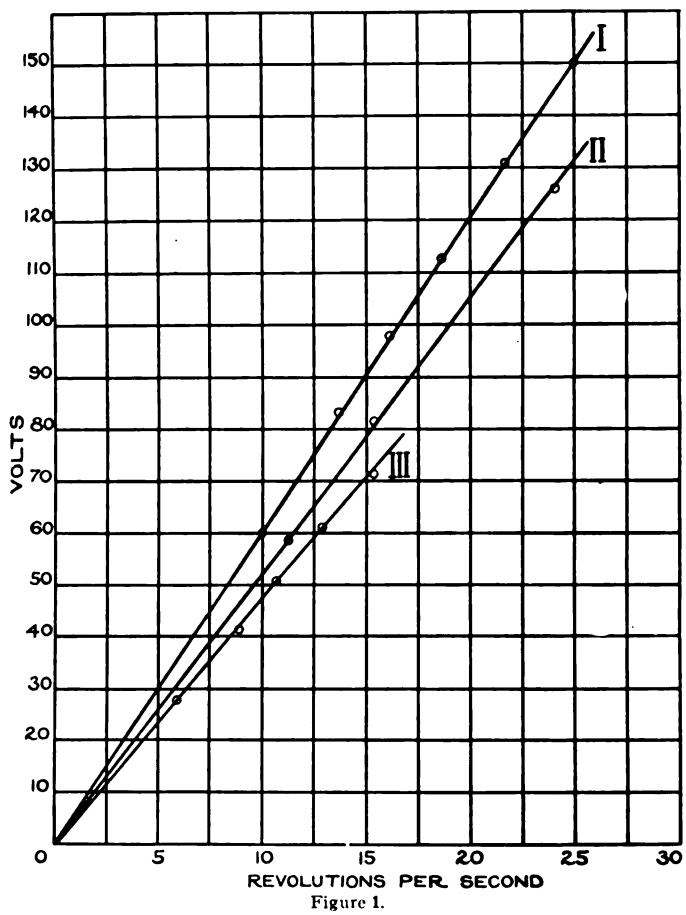

Figure 1.

is mechanically weak and results in the wearing parts giving out at an early date. Moreover, it involves an inconvenient amount of effort on the part of a subscriber to turn a heavy gear.

After having designed and constructed a generator it becomes interesting to test the voltage in order to find the efficiency of the machine. This is usually done in practice by connecting an ordinary alternating current voltmeter to the terminals of the machine and reading the indicated voltage. With a machine of considerable size and output, such as an electric lighting machine, or a power generator for railway work, this is all that is necessary, for the current used by the measuring instrument is such a small fraction of the total output of the machine that the error may well be neglected. With a telephone generator, however, the case is entirely different. Since the current output of such a machine is

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very small it is evident that the instrument used for measuring the voltage should not require any current for its operation. The ordinary type of instrument, such as the Weston, depends upon the electro dynamic action of parallel currents for its operation. Hence, when connected across the terminals of such a generator the measuring instrument acts as a load upon the machine, thus reducing its pressure considerably. Such an instrument will not give the real electromotive force of the machine, but will indicate an E. M. F. lower than the true value. The discrepancy will depend upon the resistance of the voltmeter used.

There is in general only one method whereby the true voltage of a machine may be measured, and this method depends upon the use of an instrument which consumes very little energy in its action. There are various ways, however, in which the wave form of the pressure or current may be relatively determined. The most important among these is found in the use of the oscillograph, an instrument which will be fully described later on.

The exact determination of the true voltage of a large machine may be easily made in various ways by using instruments whose consumption of energy is small compared with the output of the machine. For a telephone hand generator, however, only one real accurate method lends itself to use. This method depends upon the use of an instrument known as the electrostatic voltmeter; this instrument is one of the earliest types of measuring instruments designed and used in the study of electrostatics, where only small quantities of electricity are measured.

The electrostatic voltmeter depends upon the forces acting between two charged bodies for its action. Since only an infinitesimal amount of current is required for charging the bodies, such an instrument will measure the E. M. F. of a telephone generator very accurately. Voltmeters of this type are calibrated to read directly in volts and are made with various scale ranges, so that it is an easy matter to procure one which is adapted for measuring generator voltages.

As an example showing a difference in results obtained by using the two kinds of instruments, measurements were taken on a five-bar generator which was geared to a direct current motor of very constant speed. A rotation counter was attached to the end of the armature shaft of the generator and a stop watch used in determining the speed of rotation. A Weston alternating current voltmeter having two coils, one of 1389.4 ohms and the other of 2778.8 ohms resistance was used. The former coil gave a range to the scale from 0 to 75 volts, while the latter coil gave a range from 0 to 150 volts. A Thomson multicellular electrostatic voltmeter was also used for getting the true E. M. F.'s of the machine at different speeds. The following data were secured as the average of several observations, using the electrostatic voltmeter:

REVOLUTIONS PER SECOND	VOLTS	VOLTS PER REVOLUTION
10.0	60.0	6.00
13.8	83.5	6.05
16.0	98.0	6.13
18.6	112.5	6.06
21.9	130.5	5.97
25.0	150.0	6.00

Average, 6.035

A curve plotted using the values given in the first two columns gives a good idea of the relation existing between the speed and voltage of this machine. Curve 1, Figure 1, shows this relation in which the revolutions per second of the armature are plotted on the horizontal scale and the voltages on the vertical scale. It will be seen that a straight line relation exists between the two quantities, or that the voltage is directly proportional to the speed of the armature. This relation is, or should be, always true for machines of larger design. The range of speeds used in this case far exceed anything used in practice, as will be seen when it is remembered that it is impossible to turn the crank handle at the rate of five revolutions per second, for any length of time. At the ordinary rate of turning a pressure of about one hundred volts is generated.

The Weston voltmeter was next placed in parallel with the electrostatic voltmeter and a series of readings obtained. Since the readings on the instruments were

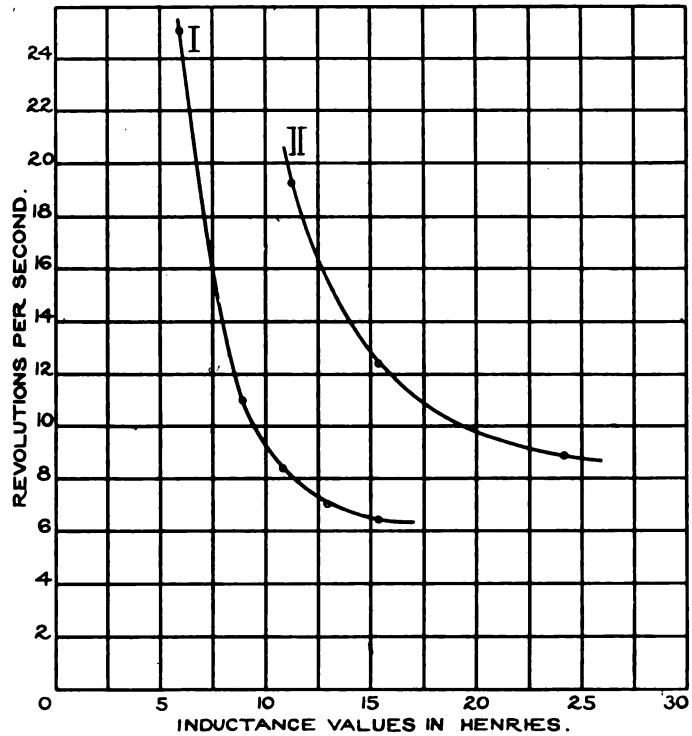

Figure 2.

the same in each case, only those of the Weston are given in the following table, which were obtained on the 0 to 75 volt scale:

REVOLUTIONS PER SECOND	VOLTS	VOLTS PER REVOLUTION
5.71	28.50	4.99
9.10	42.00	4.62
10.75	51.00	4.75
13.00	61.00	4.70
15.40	71.00	4.61

Average, 4.73

The results of these data are shown in Curve 2, Figure 2, plotted on the same scale as those of the previous set. It will be seen that the voltages for corresponding speeds are much lower in this instance, the average number of volts per revolution being only 4.73, while in the previous case it is 6.035. This means that the indicated voltage is only about 79 per cent of the true E. M. F.

A third set of readings was taken with the 0 to 150 volt coil in circuit, the resistance of this coil being 2778.8 ohms. The following were the results:

REVOLUTIONS PER SECOND	VOLTS	VOLTS PER REVOLUTION
11.25	69.00	6.25
15.30	81.40	5.32
24.20	125.50	5.19

Average, 5.55

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These results are shown in Curve 3, Figure 3. The average voltage per revolution is about 85.33 per cent of the true E. M. F. of the machine. The larger resistance used with this coil cuts down the current in the circuit and consequently brings the potential difference across the terminals of the voltmeter nearer to its true value, although there is still a discrepancy of about fifteen per cent.

Since the E. M. F. generated is an alternating one the reading of the voltmeter indicates the effectual voltage. If any reading be divided by the resistance of the instrument, the effectual current will be obtained, since the instrument has an induction factor so small that it can be neglected. The current multiplied by the voltage

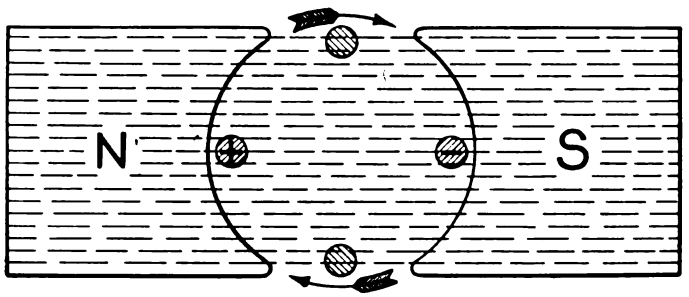

Fig. 3.

will give the watts output under the conditions named. The following table shows the output in watts and the effectual currents at different voltages.

VOLTS	AMPERES	WATTS
28.50	.0205	.585
42.00	.0302	1.268
51.00	.0367	1.87
61.00	.0439	2.67
71.00	.0512	3.63
59.00	.0212	1.25
81.40	.0293	2.38
125.50	.0452	5.66

Another curve might be drawn showing the relation between the voltage and the output. This would be a straight line, as can be seen by dividing the one by the other. Such a curve merely shows that the output is directly proportional to the voltage of the machine which is naturally inferred from the fact that the resistance remains constant for each set of observations.

The above data enables one to compute the inductance of the armature. In order to do this we make use of the equation expressing the value of an alternating current,

$$I = \frac{E}{\sqrt{R^2 + (2\pi n L)^2}}$$

in which I equals the effective current, E is the effectual E. M. F., R is the ohmic resistance, n is the number of alternations per second and L is the factor called the coefficient of self-induction. In general, the induction depends upon the number of turns of wire, the compactness with which it is wound, and the presence of the iron core. Since the iron may be of various shapes and also since the magnetism in it is affected by the current in the armature wires, the inductance usually varies with the current. Substituting the values obtained in the above sets of data, the following values of inductance are obtained:

E	I	N	L
38.5	.0205	11.42	25.0
42.0	.0305	18.2	11.0
51.0	.0367	21.5	8.4
61.0	.0439	26.0	7.8
71.0	.0512	30.8	6.52
59.0	.0212	22.5	19.3
81.4	.293	30.6	12.4
125.5	.452	48.4	8.97

The induction is much larger for the slower speeds and smaller currents. As the machine speeds up, the inductance decreases very rapidly until about ten revolutions per second of the armature are reached and then the decrease becomes much slower. Above this speed the inductance is small. With the larger resistance in the circuit, the inductance is much larger for any given speed and the change is not so rapid, as will be seen upon examining curves I and II of Figure 3. For speeds above fifteen revolutions per second the inductance remains fairly constant. Since this is about the normal speed for which the machine was designed it will be noticed that the inductance is close to the minimum.

The armature of this particular machine has nineteen hundred turns of No. 32 B. & S. wire, having a resistance of 240 ohms. The core is laminated, it being composed of the usual form of punchings. The results show no loss due to eddy currents, these being too small to be detected.

(*To be continued.*)

Troy Company Prosperous.

Under the management of George W. Christian, the Troy Telephone Company, Troy, Ohio, has enjoyed a most prosperous year; in fact, this prosperity has so completely filled the switchboard that in order to take care of the increasing demand for its most satisfactory service the company has come to a realization that an extension will have to be made at an early date, at which time it is planned to install an underground cable system at least as far as the paved streets extend.

Following are the rates for service in force April 1:

Troy business, individual lines	$2.00	per month
Troy residence individual lines	1.25	" "
Troy residence 2-party line	1.00	" "
Troy residence 4-party selective	1.00	" "
Christiansburg, business	2.00	" "
Christiansonburg residence individual lines	1.25	" "
Christiansonburg residence party line	1.00	" "
Country business 10-party line	2.00	" "
Country residence 10-party line	1.00	" "
Extension telephones, 1 subscriber in same bldg.	.50	" "

When one telephone is used by two parties, an additional charge of one dollar per month is made.

Rentals are due the first of the month and payable at the office. The rates on all telephones for which rental is not paid by the 10th of the month will be 25 cents higher. It is the opinion of the management that the penalty rate imposed is a most important factor in the matter of making close collections.

THE VOICE FROM THE VATICAN

Pope Pius X, the most distinguished churchman in the world, is one of the most constant and enthusiastic telephone users. When as Cardinal Sartos he left Venice to become Pope Leo's successor, he bade his friends goodby. He has never returned there, of course, and never again will step foot in the city so long as the pope remains a prisoner in the Vatican. Shortly before he became high pontiff a telephone had been installed in the Vatican and since then his friends and former parishioners have heard his voice many times over the wire. He bestows the apostolic blessing on his old parishioners by means of the telephone.

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Eleventh Annual Iowa Convention

THE eleventh annual convention of the Iowa Independent Telephone Convention was held at Sioux City, Tuesday, Wednesday and Thursday, March 19-21. The entire proceedings characterized the "Iowa Idea," and the wide publicity that had previously been given to the meetings brought delegates and visitors from far and near. Probably at no other state convention has there been so large an outside attendance.

In order that each member might be able to identify a fellow member without trouble the entertainment committee adopted a popular plan. Upon registration each delegate and visitor was given a button badge showing the number under which he registered. A folder containing all the names, numbered to correspond to the numbers on the badges, was published and one of these lists was given to each guest. By noting the number on a badge, anyone, by turning to the folder, could at once discover the name and address of a stranger.

The convention opened at 2 o'clock Tuesday afternoon in the Garrettson Hotel, with nearly 200 delegates present. The first hour was devoted to organization and the appointment of the various committees, after which President P. C. Holdoegel delivered his address, the keynote of which was the growth of the Independent telephone and the importance of thorough state organization. He outlined the plan of the district organizations, showing that the state was divided into five districts, each being governed by a president who also served as vice-president of the state association.

The field agent who is sent into the districts where there is a strong fight against the Bell Company to aid the local Independents was spoken of as a valuable accession to Independent telephony. He urged more complete organization so that every Independent telephone man shall become a member of the association and called for more funds to provide for a traveling secretary and an assistant association secretary. He spoke in glowing terms of the future of Independent telephones and of the successful fights waged against competitors.

The president of the association is as progressive in his own business as he is in the association. Although his home town has only 1,800 population, he is constructing a two story and basement brick building for the telephone company's home and is also placing the telephone cables underground. It is claimed to be the only city of its size that will be able to boast of an underground telephone system.

F. McNally, Carroll, followed with an address, "Is It Advisable to Appoint a State Toll Line Inspector?" and W. J. Stanton, Waterloo, gave the closing afternoon paper on "The Necessary Standardization of Clearing House Toll Lines and Equipment."

At the Wednesday morning session Mayor W. G. Sears characterized the meeting as one of the largest and most enthusiastic he had seen in Sioux City.

"When I watch you men in this convention," said the mayor, "I am impressed with the earnestness and intelligence with which you discuss problems that are facing you in the field. Every man seems to be a worker."

The chief executive complimented the Independent men upon the fight they were making against the telephone trust.

"Do not break over," he said, "but keep your side on a level with the other fellow. You are invaluable to Iowa. We want you and need you, and hope that you will continue the work which you have thus far successfully carried on."

The larger part of the session was devoted to an interchange of views between representatives from neighboring states. Greetings from North Dakota were brought by E. H. Hart, of Fargo; from Nebraska by R. E. Mattison, of Lincoln, manager of the telephone traffic association.

C. A. Hollis, of Hudson, state agent of the association, spoke of the work that he had been doing in an effort to get toll lines to afford better service.

E. H. Moulton, of Minneapolis, and Judge C. B. Kennedy, of Canton, S. D., both of whom were on the program for state greetings, were not present. Judge Kennedy arrived shortly before adjournment.

In his paper Mr. Stanton advocated the standardization of toll line equipment as one of the most effective means to get a larger share of the long distance business.

He acknowledged that the service which is furnished by the Independent companies over the long distance lines is not always the best, but declared that a great volume of business goes to the old companies because, on account of standard equipment, it is easier to hold conversation over their lines.

The remedy, he advocated, lies in the standardization of all the various items of equipment in use on a telephone system. He urged that the companies get together and adopt a uniform instrument to be installed by all Independent companies in the state, claiming that by so doing messages could be transmitted through various exchanges without loss of audibility.

The discussion of Mr. Stanton's paper indicated that the convention thought standardization of equipment would be an effective means of meeting the Bell people in the fight for toll business. Upon motion a committee was appointed to formulate plans for a uniform equipment and arrange to have the report published in pamphlet form.

James B. Hoge, president of the International Independent Telephone Association, in an address before the association, intimated that the postmaster general of the United States was using the prerogative of his office in opposition to the Independent telephone men of the nation. He appealed to the telephone men of Iowa for assistance in the fight to get an Independent franchise in the District of Columbia.

"We ask the aid and co-operation of your representatives in the house and in the senate," said Mr. Hoge, "in our effort to secure the right to build a plant in the city of Washington, and thus prevent present and future postmasters-general from issuing orders prohibiting the installation of telephones in the various postoffices throughout the length and breadth of this country unless they connect with Washington."

The International president explained the organization of a syndicate which sought at the hands of congress a franchise for an Independent telephone system in the District of Columbia, and how the proposed effort was foiled.

He reviewed the progress which the Independent companies are making, claiming that in every state wonderful advancement had been made. He spoke of great cities in which the Independents have been successful in getting franchises.

"There has been a great improvement during the

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last two or three years," he said, "in conducting the business. Independent telephone companies are putting their properties in the strongest possible financial shape. They appreciate that they have now reached the point where they are thoroughly established. There has been an awakening of public interest in Independent telephony. The investing public is more anxious about it today than it has ever been before.

Mr. Hoge declared that the competitors of the Independents have depreciated the value of their securities by short-sighted methods in carrying on the campaigns, making it impossible to sell their stocks and bonds.

"They have even gone so far as to put their securities upon the remnant counter," he said. "Failing in an effort to induce the public to purchase, they have negotiated short time loans, which must eventually be financed by selling securities. I am not in favor of the Independent interests trying to build themselves up by undertaking to tear down the securities of their competitors. I consider such a policy extremely short sighted and calculated to defeat the very purpose for which it might be inaugurated."

The International association president paid a tribute to the Iowa Telephone men. He said: "The Iowa telephone people have the reputation throughout the United States of being wideawake and thoroughly equipped to take care of this state and lend enthusiasm and financial enthusiasm, when necessary, to neighboring states."

There was an increase in the attendance of the second day over the preceding day. It was conservatively estimated that fully 350 delegates were present at the morning session.

The afternoon was given over principally to discussion of farmers' and mutual telephone companies. That the popularity of these telephone companies is fast waning owing to their impracticability after passing a certain point, was the substance of several addresses made by delegates. It was pointed out that the number of mutual companies were diminishing, owing to the superior service given by the better organized Independent lines. Many of the mutual companies are allying themselves with Independent companies.

W. D. Dunsmore, vice-president and manager of the Oskaloosa Home Telephone Company, closed the afternoon with a paper on "Economy in Construction, Labor, Equipment and Management."

An interesting feature of Thursday morning's session was impromptu addresses by F. J. Taggard, secretary of the Missouri Independent Telephone Association and L. A. Herrick, general manager of the Freeport (Ill.) Independent Telephone Company. Both were unexpected, but welcome guests at the convention.

George T. Hewes, of Des Moines, gave a report of the clearing house for the past year and was optimistic in speaking of the future. The report is of such importance, bearing as it does on this vital subject in operating, that it is printed herewith:

"We are no longer entirely in the dark regarding the advantages of the institution to the Independent telephone cause of this state, to the public and to the financial interests of all telephone companies associated therewith. The first two months, January and February, 1906, were occupied in preparing those companies (who were under contract at that time) with full details regarding the methods of our system of accounting, securing from them information regarding their lines, stations and exchanges.

"The first month's business cleared was for the month of March, since which time we have shown a gradual increase, as follows:

April over March	246 per cent increase
May over March	316 per cent increase
June over March	352 per cent increase
July over March	475 per cent increase
August over March	496 per cent increase
September over March	555 per cent increase
October over March	644 per cent increase

"This gradual increase in the gross amount of toll business cleared is very gratifying indeed and when you understand that there are thirteen companies who have signed contracts for clearing house service who have not as yet made a report to this office, you can understand that during the immediate future the percentage of increase each month will continue in a larger ratio than in the past.

"Since the first month's clearance up to the completion of the pro-rating of October business, we have not increased the number of employees; having in mind securing the greatest efficiency at a minimum cost. We have arrived at that point and find that it will be more economical to increase the number of employees and thus shorten the time consumed in completing reports to the several companies of their balances. This will reduce the cost of clearance to each company.

"As a matter of general information, a report of this character is most easily grasped and understood when the results obtained are recorded in percentages. The actual figures representing clearing house transactions are incorporated in my report to the stockholders of the clearing house.

"We have now forty-three companies who have signed contracts with the clearing house. Thirty-three companies have reported details concerning their several systems as follows:

767,549—Population of the cities and towns whose exchanges and toll stations are reached directly by lines of the clearing house, not including population within the limits owned by the New State Telephone Company.

135,685—Independent telephones including rural telephones controlled by members of the clearing house (not including the telephones owned by the New States Telephone Company).

25,865—Bell telephones in this same territory covered by clearing the telephones owned by the New State Telephone

"The following number of miles of wire (air line distance) are shown on clearing house Map No. 9:

Copper	3,300
Iron metallic	8,862
Grounded	1,796
	13,958

"From this you will understand on account of the circuitous routes between stations that the actual number of miles of wire is far in excess of these figures.

"An analysis of the toll records of several companies (Bell) and the determination of the earnings per unit of population has enabled us to determine the extent to which expenditures for the building up of the toll line system can be safely made. The general average of earnings per caput in all of the companies has increased in the last ten years from twenty to fifty cents. In 1903, the lowest average per caput in any company was twenty-four cents, and the highest about one dollar. Except in territories showing the very lowest average, we should not hesitate to make fifty cents per caput the basis for extensions to new points, and for the territory of all companies which show average earnings above the general average we should apply the general average of their particular territory. Experience has shown that in order to meet the depreciation and maintenance charges in toll lines the gross receipts should amount to at least twenty per cent of the toll line cost.

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They do not hesitate to recommend the construction of extensions to a toll line system whenever the prospective earnings will amount to twenty per cent of the estimated cost of the extension.

"As an example, consider two towns, each with a population of 1,000 and located twenty miles distant from each other. The cost of the line to connect these towns will be, say, $4,000. The anticipated earnings per caput is forty cents; this gives a gross earning of $800, or twenty per cent of the cost of the line. If these towns were forty miles apart instead of twenty miles and the cost $8,000 instead of $4,000, the gross earnings would be only ten per cent of the cost. Such a line might clearly be a bad investment unless the toll line company could rent pin space to farmers' companies at a price which would not only encourage the farmer, but furnish additional telephone subscribers who would increase toll earnings.

"The toll earnings per unit of population should be made the factor in determining the advisability of the construction or extension of toll lines as well as the basis for all computation regarding the toll earning capacity in any locality instead of the amount of earning per subscriber, for the reason that the percentage of subscribers to population is such a variable quantity.

"I have before me a statement (Bell Company) of toll conditions in exchanges.

No. of public stations.	No. of subscribers.	Population.	Outgoing Toll receipts 1 year.	Average receipts per caput.
57	7,440	142,668	$114,060.85	.801

"Statement of toll condition with public stations only:

No. of public stations.	Population.	Outgoing toll receipts 1 year.	Average receipts per caput.
27	6,998	$4,005.10	.572

"Data secured from records in the clearing house, including agricultural districts and comprehending small towns:

No. of public stations.	Population.	Telephones.	Outgoing Toll receipts 1 year.	Average receipts per caput.
19	9,349	1,671 exchanges 1,039 rural 2,710	$4,530	.49

"Commercial districts and comprehending principal exchanges having competition:

No. of public stations.	Population.	Telephones.	Outgoing Toll receipts 1 year.	Average receipts per caput.
10	19,925	2,308 exchanges 1,095 rural 3,403	$5,630.40	.28

"Wherever the amount of toll earnings per subscriber is unusually large, a low percentage development in subscribers is generally found. It is, therefore, very misleading to quote the toll earnings per subscriber as an indication of the development of an exchange. The larger the subscriber development, the larger will be the toll earnings per unit of population, but the smaller per subscriber. It is, therefore, believed that the only reliable basis for calculation of earnings upon the toll line investment is the anticipated amount of earnings per caput, i. e., per unit of population. The average toll earnings of any half dozen places in a given territory where the local conditions are the same, rural or commercial, will show approximately the average of the whole territory. Low earnings per caput may indicate any one or all of many unfavorable conditions, among which are lack of toll facilities, poor service, competing toll lines, competing exchanges, etc. The amount of earnings on toll line investment is dependent upon all of these contingencies—added to which are the ratio of mileage of toll line to population and the number of circuits per mile of line.

"It is found, as a general rule, in a territory where cities and towns are situated far apart the receipts per caput are large when compared with a territory where the cities and towns are near together. It is found that the earnings per mile of circuit are greater where cities and towns are near together.

"What do these figures signify?

"That we Independents in Iowa have the population, the exchanges and only lack the facilities, to control the toll line long distance business which originates and terminates in Iowa.

"It is now up to you to say whether this volume of business will be neglected. As before mentioned, a population now within the clearing house lines of over 767,549, if computed on a basis of 25c per caput, means $191.887 per annum, aside from the preservation of your present exchange investments, and the recent voluntary cut on long distance toll rates within the first 100 miles indicate that the other telephone companies concede that we have what we claim.

"Heretofore Independents have been disposed not to build toll lines any great distance, as they prefer to exercise jurisdiction over the money collected for tolls, and have even gone so far as to refuse to allow talks and reverse the charges when the call terminated beyond their lines.

"Now, through the medium of the clearing house, they are just as safe in reversing charges on clearing house stations as though they had the cash for the call.

"Our system of cross checking possesses several advantages, the most important of which is that it results in a discipline which produces accurate record of all calls on the part of all operators.

"The fact that errors are discovered quickly and brought home to the operator tends to make them careful. A second advantage is that the error is also brought to the notice of the originating subscriber so quickly that there is little trouble in making collections. All toll accounts are kept up-to-date and toll bills can be made out promptly. There is no question but that a large percentage of toll bills (especially interchanged business) you would be willing to discount 15 per cent and even 20 per cent to have settled, particularly when they are two or three months old after the conversation took place.

"The clearing house is the institution which not only settles but collects all balances between clearing house companies and your traffic committee.

"The assessment for clearing and collecting and distributing proceeds for the first seven months was 12½ per cent of the gross amount cleared and the expense for handling October business was 10 per cent. The errors detected were five and three-tenths per cent of the gross amount cleared, of which we collected and remitted to the several companies 35 per cent of the errors detected, the 65 per cent of errors detected which we did not collect for is explained as follows: 20 per cent represents errors in routing by the clearing house; 20 per cent represents messenger fees not reported by sending station to receiving station; 30 per cent represents failed calls where no talks took place although the "out ticket" may have been marked failed and the in O. K.; 3 per cent represents deadhead calls not authorized by clearing house pass; 10 per cent represents reversed calls

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not so recorded to receiving station; total, 65 per cent; 35 per cent collected for and remitted; grand total, 100 per cent."

As indicative of the development of the Independent systems in Iowa, as compared with the Bell growth, Mr. Hewes presented figures in which was shown actual number of instruments which the rural districts of Iowa are now using. He claimed that the Iowa Telephone Company, the Nebraska Telephone Company and the Western Electric Company, all organizations not allied with the Independent association, have a total of 37,777 exchange and rural telephones in operation in Iowa, while the various Independent companies have 183,586.

The total number of telephones now in use in the state is 223,325, which number, according to the United States census report, is 21.9 per cent of all the telephones in use in the nation.

The report of C. A. Hollis, the state agent, was gratifying to the delegates. An assessment of 1 per cent per unit was made, the proceeds to be devoted to further advance the work.

The three closing papers of the day, which marked the end of the business session, were given by Roy Walker, of Des Moines, on "Hints on Management of Traffic"; A. T. Averill, of Cedar Rapids, on "Conservative Financing," and H. D. Douglas, of Cedar Rapids.

Resolutions commending Howard S. Baker, chairman of the entertainment committee, and C. H. Smith, secretary of the New State Telephone Company, and chairman of the program committee, were adopted. The resolutions also included James H. Shoemaker, E. II. Shoemaker, E. H. Martin and George Hewes, for their work toward making the convention a success.

An unusual precedent was established by the association in its closing session when the entire board of old officers was re-elected for a second term. This is the first time in the history of the organization that such action has been taken. The officers are:

President—P. C. Holdoegel, Rockwell City.

Secretary Treasurer—Charles C. Deering, Boone.

Executive Committee—J. S. Bellamy, Knoxville; J. C. Thorne, Fairfield; E. H. Martin, Webster City; George N. Bandy, Des Moines.

The election of the old officers was unanimous and was greeted by cheers. The northwest section of the convention moved the election and the other four sections followed quickly in seconding the motion.

In the nominating speeches the reason of the election of the old board was given. This has been the most progressive year in the history of the association and to the aggressiveness of the present officers is this due.

The final registration showed that there are 425 delegates in attendance at the convention.

Cedar Rapids was chosen as the next meeting place, the choice being unanimous. Cedar Rapids was in the field for this years' convention, but Sioux City won out, and as Cedar Rapids turned in to help Sioux City, the local delegation returned the honor by boosting for Cedar Rapids this year. Waterloo was also an enthusiastic booster for Cedar Rapids, with the result that Waterloo will probably get the 1909 convention.

Missouri Convention Date.

Kupper Hotel, Kansas City, has been selected as headquarters for the annual convention of the Missouri Independent Telephone Association to be held April 24 and 25.

Independent Association for Maine.

About 8,200 Independent telephones were represented at the meeting of some of the managers of the Independent telephone companies of Maine, held at Lewiston, March 21st, when an association was formed, by-laws adopted and officers elected.

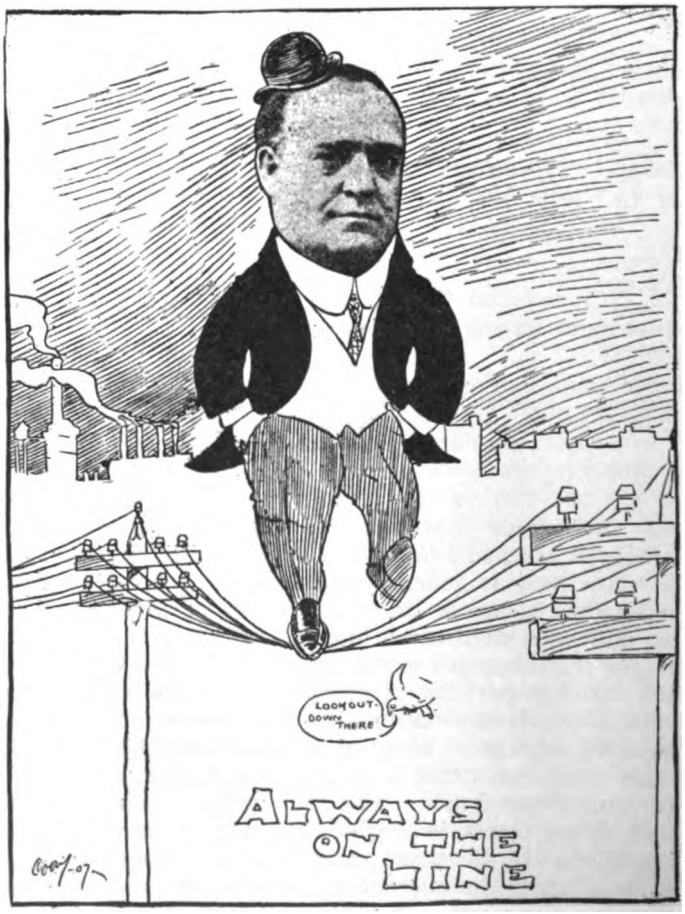
Considering the various attempts at organization, the meeting was a decided success, and, beside those present, a large number who were unable to be present expressed themselves as very favorable to the association by writing and wishing to join.

The state of Maine has more Independent telephones than the New England Company (Bell), taking into consideration the Independent companies that are under contract with the New England companies. As soon as the association has time to interview these companies it is reasonably certain that they will withdraw from the present agreement with the New England company.

The following were present at the meeting: H. S. Ruse, Mount Vernon; Elmer E. Daicey, Lewiston; W. H. Parsons, Livermore Falls; B. N. Lewis, Lisbon Falls; A. M. Fogg, East Hebron; E. A. Ebersole, Portland; J. S. Wells, Providence, R. I.; H. S. Hartford, Standish; G. R. Armstrong, Farmington; D. R. Smith, Bethel; W. H. Lurvey, West Paris; F. E. Ebersole, Portland, and M. E. Crow, Houlton.

The following are the first officers of the association: President, F. E. Ebersole, Portland; vice-president, W. H. Lurvey, West Paris; secretary, M. E. Crow, Houlton; treasurer, Harry S. Russ, Mount Vernon; executive committee, F. L. Ames, Norridgewock; C. P. Chandler, New Gloucester; Dr. Beehaught, Calais, and the president and secretary, *ex-officio*.

Men Worth While



G. G. King, General Manager of the Youngstown (O.) Telephone Company.

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Covered Distribution*

By A. Magnall

WHEN agreeing to present a paper on this subject, I had hoped that we would have had an opportunity of having more actual experience, but being called upon to open the session, and the proposals on hand not having fully matured, I am afraid you will have to be content with one's own opinions instead of descriptions of actual practice.

I would like to call attention to the mistaken idea many have as to what is meant by covered distribution, and I regret to find there are many old in experience who consider it an act of retrogression, whereas, if they will but look into the matter fully, they will find that much work of the past could have been carried out cheaper and better with covered distribution than with open wires.

To look on an innovation with suspicion is, however, but a common failing, and perhaps it is well at times to be a bit backward and await events, but if we are to hold our own in any industry, we must always be on the lookout for something better than what we have. If not better, something equally as good at less cost, and in my opinion we have in covered distribution something infinitely better and cheaper than distribution by open wires.

I have been long enough in the service to have at one period used nothing but No. 11 B. W. G. (200 lbs. per mile) iron wire for overhead circuits, and to know that when 70-lb. copper was introduced we, as workmen, took a strong dislike to it, for we had been so accustomed to the heavy wire. We were continually breaking the copper wire down, either by damaging with pliers, making kinks, or attempting to stand on it. We also did wonders by burning the wire with the soldering iron, for we commenced using the copper as we had the iron wire, *i. e.*, when making off, we put a tail or butt on the insulator

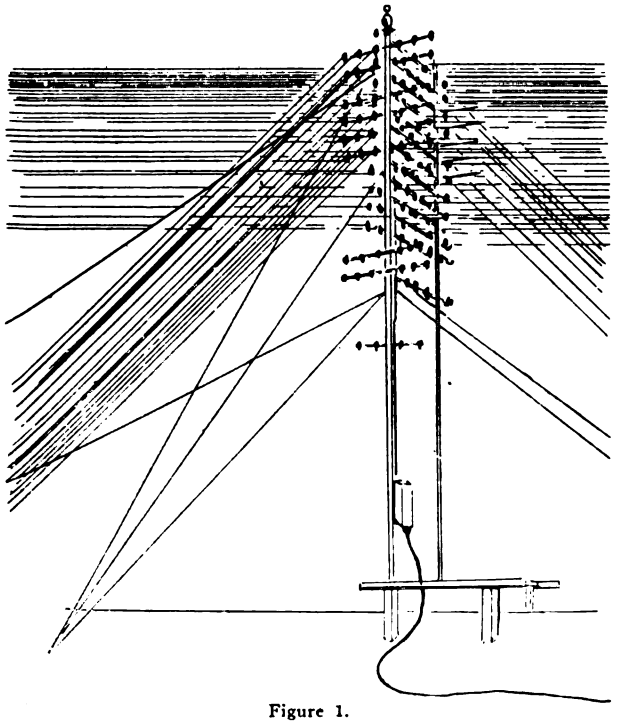

Figure 1.

with the result that it was a common occurrence for a broken wire with a draw vice at the end of it to pass far too close to one's head to be pleasant, owing to the wire becoming soft when the joint in the line was becoming soldered.

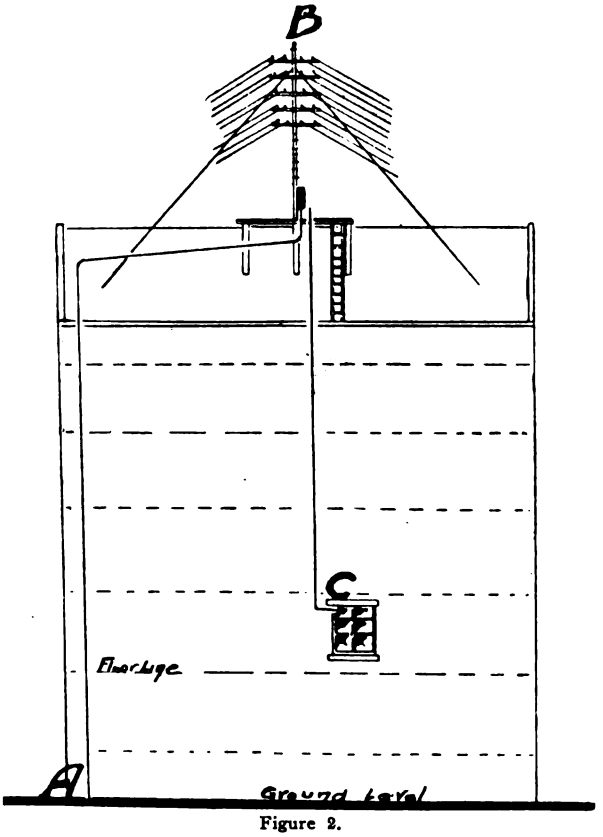

Figure 2.

The same again occurred when bronze wire was introduced. The cry was, it is too light, too brittle or too springy, for it was more often let off the coil by hand than off a drum, and the result was that when the wire broke, it would come back nearly to the starting point like a coiled spring.

I merely give these few facts to show the natural prejudice there is against new methods, and as an illustration of how necessary it is to be forever on the lookout for improvements, for it is beyond doubt that it would have been a practical impossibility for the telephone business to reach anything near its present development had we been obliged to stick to iron wire for overhead work.

Covered distribution has many advantages. It admits of a larger number of wires being dealt with than is possible by overhead work. It brings down faults to a minimum, it is, like for like, less costly than overhead work, consequently more efficient.

As an illustration of efficiency and sound practice, at the same time making use of the existing plant (National Telephone Company, Manchester), I venture to sumbit the following:

Take the case of a pole line which has been up a few years. The development has exceeded expectations, and it is found that the poles are too low to carry the additional wires. What happens. The local man puts in a taller pole here, a taller pole there, and so on until when he has finished, he finds he has a heavy and troublesome open wire route. If he had studied a scheme for cable before putting up taller poles he would have erected a

*This paper appeared in the *National Telephone Journal*, London, and was read before a recent meeting of the Manchester Telephone Society.

lead-covered cable on his existing poles, and would have had considerably increased capacity, efficient plant both electrically and mechanically, and probably at a cost little above the value of recoveries.

It is of course very easy to generalize and not lay oneself open to much criticism. I will therefore now

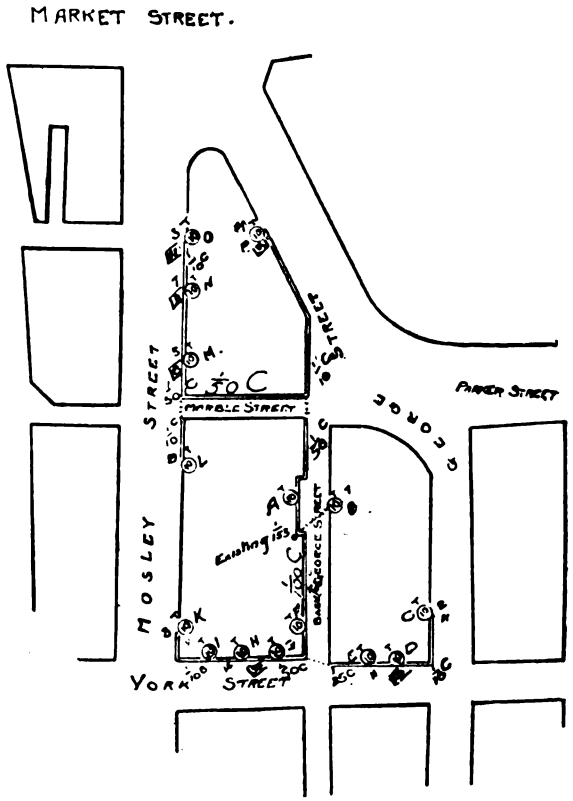

Figure 3.

confine myself to a comparison of a lay-out of covered distribution in a given block, and as it is now served by open wires.

Figure 1 is a diagram of an existing double standard on the roof of a warehouse which is fed by a 153-pair

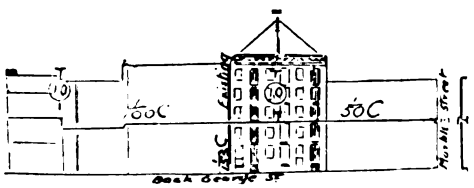

Figure 4.

cable from the exchange, led up from the street to the standard in the common way by cleats to the wall.

To glance at such a diagram is to me only to realize the dangers we are constantly subjected to by so much open wire, for no matter how close the supervision might

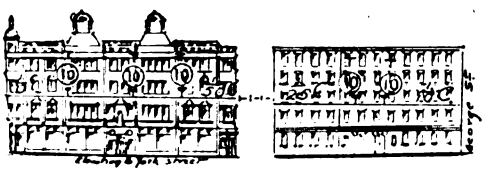

Figure 5.

be, we cannot control gales, fires and the actions of others.

Only the other day, close to this place, an insulator fell through a plate glass window, and had the clerks who usually sit close by, not been out at the time, the result might have been fatal. We have at this moment a claim for damage done by water at this very place.

Figure 2 is a plain diagram of the standard and cable, as shown in the previous illustration, together with a leader.

It is to this diagram I wish to call your special attention, and I am sure you will agree that it is absurd to continue our present method of construction in many places.

From observation it has been ascertained that in this block the average leader will reach the first floor, but to be on the safe side the leader is shown on the second floor. Now, what happens? The circuit leaves the ground at *A*, goes to standard *B*, thence back to the window *C*; therefore the double circuit is waste material between *B* and *C*. With covered distribution the circuit would be tapped at *C*.

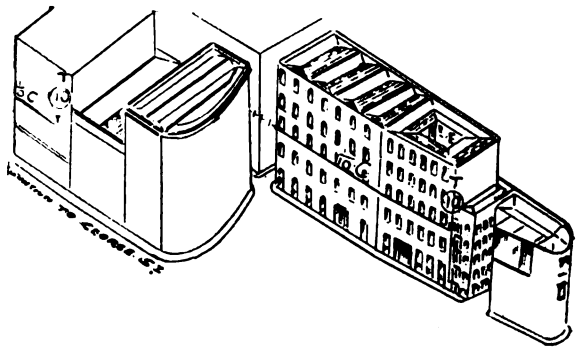

Figure 6.

The first object of an engineer is to make his line as short as possible, then to subdivide it so as to have as little leader as is possible. Therefore, as lead-covered paper cable is the cheapest and most efficient cable at our disposal we must take the lead-covered cable as close to the subscriber as is practicable. This means a much larger number of terminal heads or distributing points, but as reliable, simple and cheap terminal boxes are now available, they are to be encouraged.

Figure 3 is the ground plan, showing the lay-out, with the covered wires in place of the overhead. It speaks for itself. The references are: Ten represents the total offices or rooms in this particular part of the block of buildings. Three, number of existing sub-

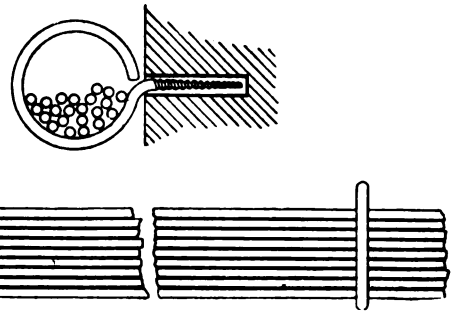

Figure 8.

scribers; 1-10 C, one 10-pair cable, and 10 T, one 10-pair terminal head.

It will be noticed that provision is made for all existing subscribers, and an attempt made to provide for a reasonable future.

In this scheme the wires at each terminal are shown as direct. This is, however, not applicable to all conditions. Take, for instance, a block where there are a number of party lines. After a careful study of the existing and likely subscribers, it might be found better to connect some of the circuits up in multiple, say, those at *N* and *O*, or *O* and *M*, or two pairs might be in mul-

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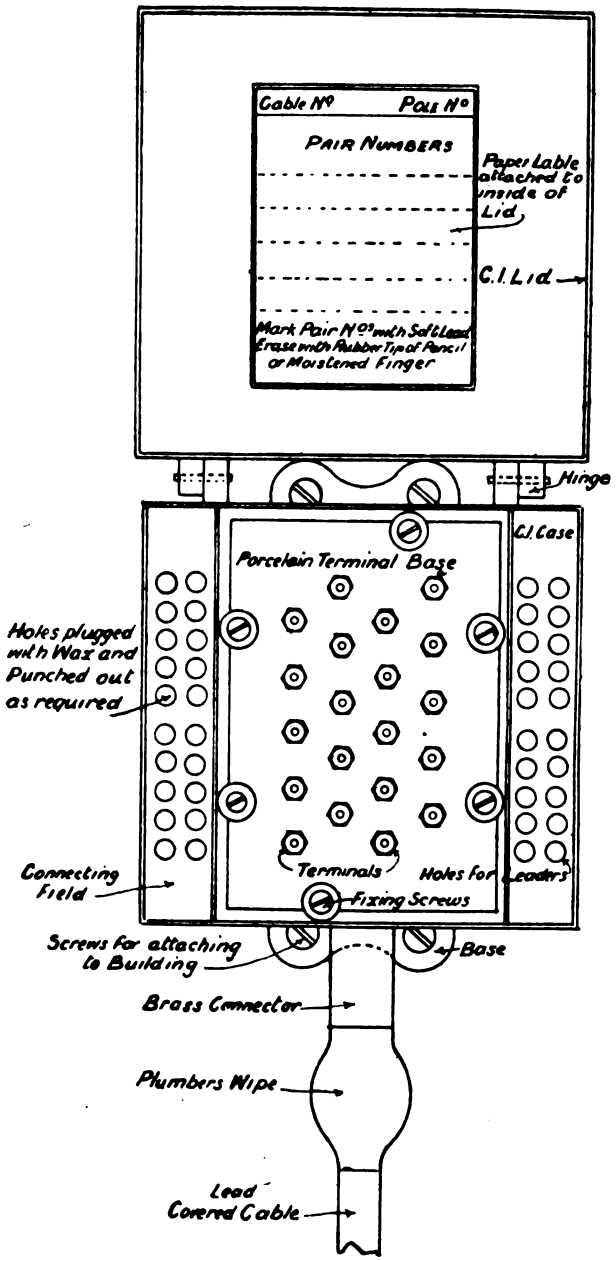
tiple, *L M, N* and *O,* and the remaining eight direct, but as there is no general formula for these combinations, each distribution scheme must be laid out on its merits after due consideration.



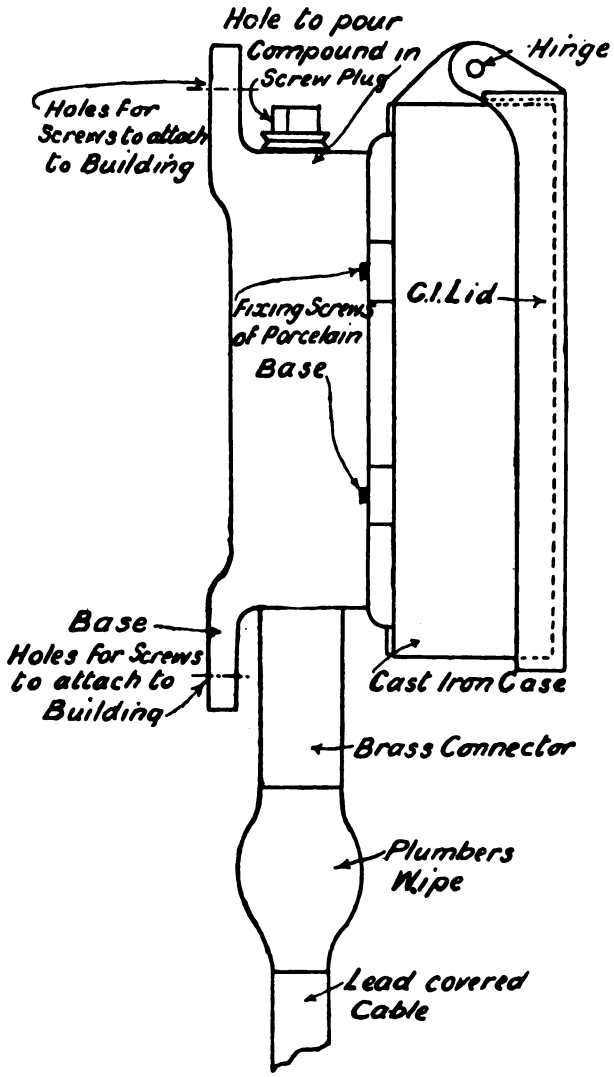


Figure 7, showing front (with lid open) and side elevation of terminal.

Figures 4, 5 and 6 show the elevations of the buildings, also the lay-out, with the positions of the terminal heads and runs for cable and leader.

far more neatly than eaves brackets, S. A. cups and the like.

This brings me to the detail work. The runs for the cables and leads must be carefully selected and with a view to being as inconspicuous as possible. At the same time the terminal heads must be easily accessible, but free from likelihood of mechanical damage.

All runs for the leads or cables themselves should be vertical or horizontal, as nothing looks worse than wiring done at all manner of angles.

Figure 7 shows two views of the terminal box. This has been under test for some time and found to be satisfactory.

With regard to the service wire or leader, this is to

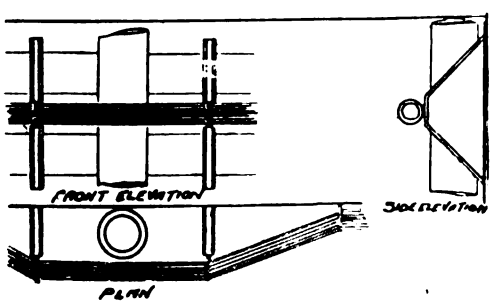


Figure 9.

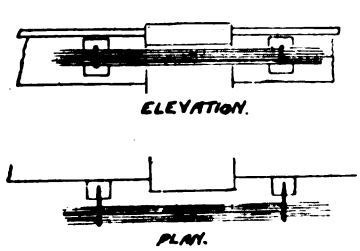


Figure 10.

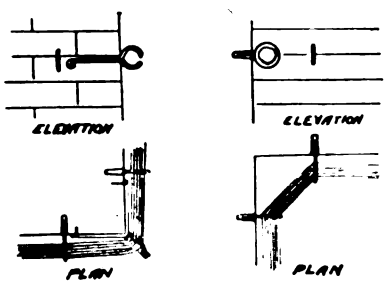


Figure 11.

You might say "Yes! it looks very pretty; but what will the property owner say?" My reply is that a lay-out of this kind, with proper workmanship, can be installed be led from the terminal box to the subscriber's office by means of galvanized iron rings, the rings to be fixed about three feet apart, or less, as may be required when

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dealing with corners, angles or obstructions. These rings are fixed by being screwed into a small lead expansion sleeve which has been previously let into the wall. Figure 8 shows two views of a ring fixed with leaders threaded through.

I should say that one of the secrets of sound covered distribution is care to avoid damage from all sources.

There are many little causes of damage which one might mention, but I show a few only, viz.:

Figure 9.—A method of passing a rain spout.

Figure 10.—A method of passing a brick column.

Figure 11.—A method of passing a right angle.

I would like to say a word to encourage all members of the staff to bring forward any little point which may occur to them in practice. It is astounding the number of men who have *thought* of improvements and let it stop at that, only to find later that some one else has brought forward the same thing, much to their own benefit and to that of the trade or profession to which they belong.

Only the other day I was glancing over an American journal when I came across an advertisement of a trolley for facilitating the erection of aerial cables, and there is in this room now a gentleman who some twelve months ago conceived an idea for similar work and made models of apparatus after the same style of that now in the market.

Those who actually carry out given works are the people who can make a success or failure of any scheme, and I advise all those who think they can effect an improvement, no matter how small it may appear, to put forward their suggestions.

I think it was Michael Angelo who said to a friend who laughed at the great attention the artist paid to his work, "Remember that these trifles make up perfection, and that perfection is no trifle."

Rural Automatic Switch.

Editor SOUND WAVES:—My attention was called recently to a communication from SOUND WAVES to the Ohio River Telephone Company regarding an automatic switch which that company is using.

I feel that in order to demonstrate more fully the use we are making of this switch it will first be necessary to tell you the conditions which made such a device necessary for the handling of the company's subscribers, who are located several miles from central on the same basis as those who began service when the company was organized, and likewise nearer the central office.

This company was organized for the purpose of giving local telephone service and, of course, at the lowest possible rate, based on the conditions which prevailed at that time, $1.75 per month for business telephones and $1 for residence telephones. This was about the rate charged by the smaller systems.

After the solicitors had completed their work, all of the business houses, or higher rate telephone subscribers, had been secured, necessarily making the additional business come from the lower rate or residence telephones. What does this condition produce? It compels the placing of all the lowest cost telephones (per installation) first for which we get the highest rental, also from which our rate was established. Each year of business brought demands for telephone service from the rural districts surrounding, which made a far greater cost for installation of each telephone than when we first started in business. When it became necessary to construct telephone lines, say, twelve miles from the central station to accommodate the demands of subscribers, the cost of maintenance, as well as installation, began to grow. Now, to meet these conditions and furnish service at the old established rate and accommodate new subscribers meant financial suicide.

We found from a record kept of the calls made on one of these long lines that only 15 per cent of the calls made on a country party line was for central. From this we decided to build trunk lines out, say, twelve miles; there put in a manual switch so that when a subscriber wanted central he could call the subscriber at whose telephone the switch was installed and have him make the connection with central. This, of course, as do all such arrangements, proved very unsatisfactory.

Mr. Green, the company's engineer, set to work on a switch which could be opened or closed by either the subscriber or central, at will. This has proven very satisfactory and by its use we are able to furnish first-class service to subscribers living fifteen or twenty miles from central at the old established rate, and not practice financial suicide either. JAMES MEAD.

Ohio Manager Asks a Question.

EDITOR SOUND WAVES:. I have O. K.'d your clipping (relating to building of new country line), but will state further for your information that while we are building this line, which is for the purpose of connecting up the different exchanges throughout this county, we are also hindered by a so-called Independent telephone company which is called the Kitts Hill exchange, and is a sub-licensee of the Bell Telephone Company. Some members of the company have tried every way to stop us from building the line, telling the property owners along the roadway that they were violating their contract with the Bell Telephone Company if they allowed us to go through with our line; that the Kitts Hill company has a contract with the Bell Company and should not allow any other telephone to be placed in their residences; if they do it will be violating their contract with the Bell Company, and they believe in living up to their contract to the letter. The president of the Kitts Hill Company has ordered the Home Telephone Company to not set any poles in front of his farm for this reason. Of course the time will come when the people will not be fooled in this way, but at the present time they are led to believe by the Bell Company that it would be a violation of the contract, while no doubt the contract is simply a sub-licensee contract, which states that no other competing line can connect in the switchboard during a specified term.

Why should an Independent telephone company which is a sub-licensee of the Bell be classed as an Independent company?

In my opinion any sub-licensee of the Bell is a part of the Bell, and should be so called and should not be recognized in any meeting of the Independent telephone companies. R. A. KNAPP, General Manager.

To Curb Bell Extortion.

A bill is pending in the Indiana legislature which provides that when a telephone company reduces its rates to kill off competition, or for any other purpose, the reduced rate shall prevail permanently, and no going back to any rate previously in force shall be permitted. This bill is aimed, of course, at the Central Union Telephone Company, which, in the past, has been in the habit of playing at the game of decreasing and increasing rates, according to the state of competition.

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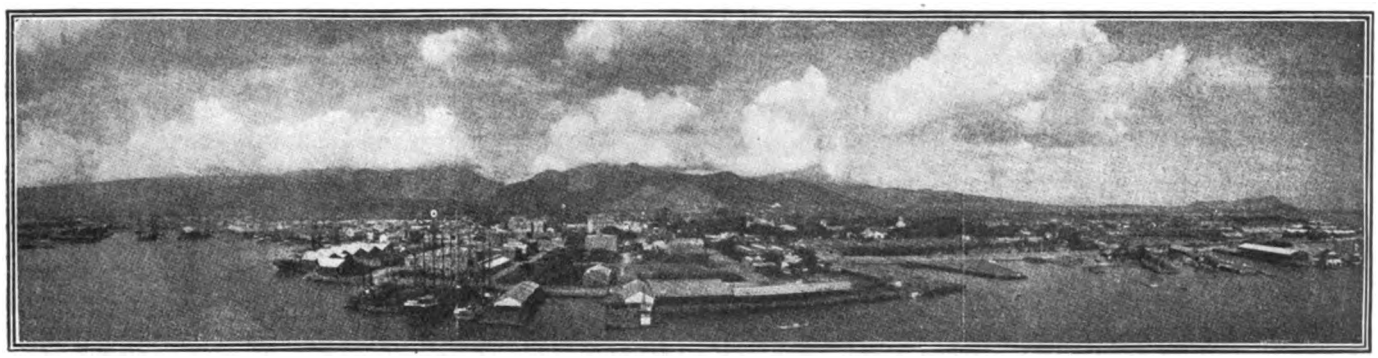
Invasion of Honolulu

By K. S. Hover



A View of the City of Honolulu Taken from the Harbor.

MARK TWAIN, reminiscently referring to the Hawaiian group of islands, said: "No alien land in all the world has any deep, strong charm for me but that one; no other land could so longingly and beseechingly haunt me, sleeping and waking, through half a lifetime, as that one has done. Other things leave me, but it abides; other things change, but it remains the same. For me its balmy airs are always blowing, its summer seas flashing in the sun; the pulsing of its surf beat is in my ear; I can see its garlanded craigs, its leaping cascades, its plumy palms drowsing by the shore; its remote summits floating like islands above the cloud-rack; I can feel the spirit of its woodland solitudes; I can hear the plash of its brooks; in my nostrils still lives the breath of flowers that perished twenty years ago."

Under the setting sun, in the mid-Pacific, lie the islands of the Hawaiian group, which present to the traveler more alluring features than are combined in any other country in the world. Nowhere else are such pictures of sea and sky and plain and mountain; such magnificence of landscapes, such bright sunshine and tempering trade winds; such fragrant foliage, such brilliant colorings in bush and tree, such dazzling moonlight.

With a climate world-excelling for its equableness, these happy islands afford a refuge for those who would escape the rigors of cold or heat encountered in the temperate zones; an entertaining resort for the pleasure seeker, an almost virgin field of research for the scientist, a sanitarium for the ill, weary or overwrought. Soft airs make the night even more gorgeous than the day, and the many shades in the landscape are deep as they are fugitive.

It is withal an entrancing land, these mid-sea dots, for the combination of tropical sunshine and sea breeze produces a climate which can be compared to nothing on any mainland, and by reason of peculiar situation to that of no other island group. Hawaii has a temperature which varies not more than 10° through the day, and which has an utmost range during the year from 90° to 55°. Sweltering heat or biting cold are unknown, sunstroke is a mythical name for an unthought thing, a frost bite is heard of no more than a polar bear.

Conjure up a memory of the most perfect May day, when sunshine, soft airs and the fragrance of buds and smiling nature combine to make the heart glad, multiply it by 365 and the result is the climate of Hawaii. The sky, with the blue of the Riviera and the brilliance of a sea shell, is seldom perfectly clear. Ever the fleecy white clouds blown over the sea form masses of lace-like broidery across the blue vault, adding to the natural beauty, and when gilded or rouged by sunshine or sunset make the heavens a miracle of color.

And as in nature's bounty the climate was made close to perfection, so the Good Dame continued her work and gave to the land such features as would make not alone a happy home for man, but as well a pleasure ground, for there are mountains and valleys, cliffs and bays, plains and beaches in varied form and peculiar beauty, foliage rich in color and rare in fragrance, flowers of unusual form and hue, and all without a poisonous herb or vine, or a dangerous reptile or animal. To fit the paradise was sent a race of people stalwart in size, hospitable, merry and music-loving. The door is always open, and over its lintel is "Aloha," which means "Welcome." All are given cordial greeting on the summer shores of the Evening Isles, and nowhere else may be found so many joys and such new lease of life as under Pacific smiling skies.

More prominent than any other cause for this condition of affairs is the fact that Hawaii is windswept throughout the year. The northeast trades bring with them new vitality, and make of Hawaii a paradise where life is pleasure all the year round. From out of the frozen north, picking from the blossoming white caps the fragrant and sustaining ozone, sweeping across the breakers to caress the land, comes the constant northeast trade wind. It is not a strong, harsh blow at all, rather a fanning breeze, nature's punkah. The average velocity for the year is about six miles per hour. The mission of the trade wind is a beneficent one always.

Altitude regulates the climate of the various islands and offers to one who would seek change an almost endless scale. Immediately back of the city of Honolulu, at about 1,600 feet above the sea, on the shoulder of Mount Tantalus, is a colony of suburban homes, a favorite place for picnic and sight-seeing parties during all seasons. The thermometer shows that at this elevation there is constant variation from the temperature at the sea level of 10°. On the great mountains, Haleakala, Mauna Loa or Mauna Kea, the temperature runs down to the freezing point in very many instances.

The most popular of all resorts is the Volcano Kilauea, where the elevation of the hotel is 4,000 feet. The temperature there seldom rises above 80° in mid-day, and the nights are always so cool that wraps are in demand and the open fire draws about it the majority of the visitors, even in mid-summer. With conditions such as these it is apparent that one visiting the tropics may find Hawaii just what he would in the way of climate, and that the change from the stifling heat or

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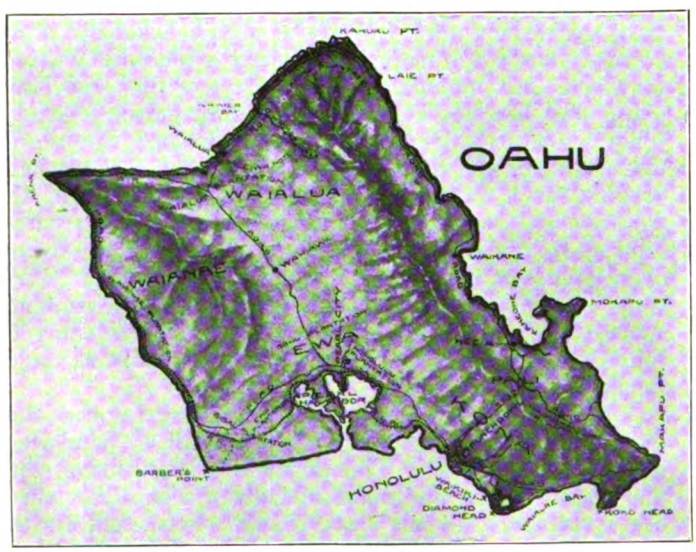
freezing cold of temperate zone cities to the perfect climate of mid-sea tropics is most delightful.

The Hawaiian Islands are in the North Pacific ocean between longitude 154° 50′ and 160° 30′ west and latitude 22° 16′ and 18° 54′ north.

There are eight inhabited islands and three small islands, or rocks, uninhabited.

The islands are of volcanic formation and each has one or more extinct craters, while on Hawaii, the youngest, there are two living ones. Much of the surface of the islands consists of lava fields, although the major portion is fertile soil. The mountains are precipitous and partially wooded, but there are no large rivers.

The physical aspect of the country is that of a huge volcanic mass, the result of many and continued eruptions, weathered down by the storms of centuries. On the new island of Hawaii, where the upbuilding process still goes on, is the highest mountain in the Pacific ocean, Mauna Kea, some 14,000 feet. Mauna Loa is almost as high, while Hualalai is close to 9,000 feet. Geological faults have cut great valleys into the sides of the vast mountain bulks, opening the way from minor caldera to the sea.



Map of Oahu, Showing Points of Interest.

Honolulu, the chief as well as the capital city of Hawaii, is situated around the bay of the same name, on the south coast of the island of Oahu.

The city has a population of about 40,000, and is modern in every respect, being equipped with electric car systems, electric lights, water supply, telephones, wireless telegraph system and railroad line connecting with other districts of the island. Fine hotels, both downtown and at Waikiki, a beach suburb five miles out, afford ample accommodations for visitors. The sea bathing is world famous, and the surf boating is unique.

Oahu, the second island in point of size, lying southeast of Kauai, is the most important of the group, containing as it does the capital. It is first in population and business and second in production of sugar.

There are two ranges of mountains, the principal one being the Koolau, which extends practically the whole length of the island. The Waianae range to the west is about fifteen miles long. It contains the highest peak of the island, Mount Kaala, 4,000 feet.

Both ranges of mountains are cut by wide valleys, through one of which, Nuuanu, is the principal pass from north to south. Between the ranges there is a high tableland.

The fertile lands of the island lie in the valleys and along the lower spurs of the mountains. Irrigation is necessary in almost every instance. Large areas are devoted to ranching, especially on the elevated plains and where water is accessible. The mountains are fairly wooded.

Oahu has nine sugar companies and produces about 125,000 tons of sugar yearly. There are pineapple canneries, large apiaries, rice plantations, sisal plantations and many fruit growing industries, convenient to the city of Honolulu.

The most remarkable natural wonder, within six miles of the center of any city, is the Nuuanu Pali, the great cliff 1,000 feet high, which forms the dividing line between the two sides of the island. It is reached by an excellent drive through a beautiful valley, the roadway continuing down the face of the cliff on the northern side.

A fine roadway extends practically around the island, and the drive along mountain precipices, on the sea shore, through small villages and past thriving plantations, is extremely popular. Tropical estates and wild canyons, cocoanut groves and cactus fields, afford contrasting sights which charm the visitor.

And it is in this flowery fairyland that Independent telephony will shortly make its debut. Mr. Guy Owens, for many years engaged in electrical work in Chicago, has been patiently advocating the possibilities of improved telephone service in Oahu since 1901. It was in 1901 that he went to the islands and installed the electric lighting and telephone systems in five of the largest sugar plantations. The year following the Standard Telephone Company was incorporated, and, like many other of the pioneer telephone enterprises it had a hard siege in its efforts to secure franchise. The first attempt before the Hawaiian legislature failed, but Mr. Owens, imbued with the characteristic Independent spirit, kept hammering away until the long-sought franchise was granted to his company, in April, 1905, and pursuant to the organic act was duly ratified by the United States Congress, June 20, 1906.

The franchise covers the entire island of Oahu, which is, as previously stated, the second in point of size, being forty-six miles long, twenty-six miles broad, and with an area of six hundred square miles. The entire population is given at 75,000.

The Standard Telephone Company, Ltd., is capitalized at $500,000, with the following officers and directors: Guy Owens, president; D. P. R. Isenberg, vice-president; Harry Armitage, treasurer; H. E. Murray, secretary; I. C. Carter, auditor.

The company will have its own fireproof building of reinforced concrete and steel construction, which will be located in the business part of Honolulu. Its initial installation includes 800 business telephones, direct line, at $4 per month rental; 1,000 residence telephones, direct line, at $2.50 per month, and 200 rural party line subscribers. The rate for rural subscribers is $6.50 per month, but contemplate everything beyond five miles from center of the city.

Eight miles of underground construction is planned for the business section of the city; sixty miles aerial all-cable for the residence section, and 100 miles pole line, carrying No. 12 copper, for the rural districts. More than 400,000 feet of cable, 125,000 duct feet of conduit, 500 miles of No. 12 copper wire and 5,000 poles will be required. An automatic system will be adopted for use within the city and a lock-out system for rural service.

A large force of skilled men in all the necessary branches will be secured from the United States, which will doubtless include Mr. Owen's brother, Roy, present superintendent of the Columbus Citizens' Telephone Company. It is expected that construction will be well under way by June of this year.

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International Association Bulletin

The ninth official bulletin of the second series, issued by the International Independent Telephone Association of America, states that there is no cause for alarm among Independent interests of the country because of the possible purchase of the properties controlled by the United States Independent Telephone Company by the American Telephone & Telegraph Company. It assures the Independents that it would mean only a temporary loss to them of about two-thirds of one per cent of the total number of Independent telephones in the United States, and owing to existing conditions it would not be very difficult to secure new franchises in those cities affected by the transaction.

It will be recalled that on February 27 the attorney general of New York state began action against the Bell Company on anti-monopoly grounds to prevent the proposed merger. Bell officials admitted that at the hearings held on March 7 and March 18 negotiations were practically completed for the Bell to take over the United States Independent Telephone Company. A temporary injunction has been secured pending the attorney general's decision, and it is more than probable that this injunction will be made permanent. It is a matter of great encouragement, coming, as it does, from international headquarters, to have such assurance.

A committee has been appointed to prepare a program for the next convention, to be held at the Auditorium hotel, Chicago, June 4, 5 and 6, and this committee invites suggestions regarding topics to be discussed. State associations are requested to select their delegates and alternates as early as possible and to report to headquarters in order that proper credentials may be issued. It is also pointed out that, under the present constitution, the order of business provides for written reports. These written reports are very essential, in order that they may be available in response to roll call. Under a recent resolution adopted by the executive committee, providing for honorary membership in the association, at an annual fee of twenty-five dollars, fifty-four prominent Independent telephone men have responded, representing eighteen states.

The Michigan Convention.

The Michigan Independent Telephone Association held its tenth annual convention at Coldwater, March 7th and 8th. Mayor Kleindist welcomed the delegates with an appropriate address, which was responded to by E. B. Fisher, president of the association. With a single exception, the entire program prepared by the committee was followed throughout the two days' session. The program follows: Report of treasurer, William Robinson, Muskegon; report of secretary, J. B. Ware, Grand Rapids; "Improving Toll Line Service," H. T. Clough, Owosso; State traffic association, W. S. Vivian, Grand Rapids; "Telephone Patrons," Fred C. Hughes, Lansing; "Getting Business," C. H. Hood, Detroit; "Manitoba Experiences," N. F. Wing, Jackson; State managers' association, F. V. Newman, Grand Rapids; "Michigan's Thumb," H. A. Price, Bay City.

FRIDAY, MARCH 8, 1907, 9:30 A. M.

"International Telephone Association," J. B. Hoge, Cleveland; "Neighborly Greetings," F. L. Beam, Mount Vernon, Ohio; "Our Duty to International Association," C. E. Tarte, Grand Rapids; "Encroachments," J. E. Hisey, Laingsburg; "Our Rural Friends," A. B. Fishback, Howell; "Important Lessons in Rural Service," Thomas Bromley, Jr. Hart; "Chicago Connections," Theo. Thorward, South Bend, Ind.; "Conditions in the Northwest," J. B. Ware, Grand Rapids.

The papers by the several members and visitors were able and appropriate and the discussions which were elicited made the meeting most interesting.

James B. Hoge, president of the International Association, in his speech before the convention, elaborated upon the brilliant prospect of the industry and reviewed telephone conditions in general.

Frank L. Beam, of Mount Vernon, Ohio, spoke for his state and his statements disclosed that last year twenty-two thousand telephones were installed in Ohio, and that the prospect for 1907 would be considerably in excess of this number. It was Mr. Beam's belief that at the end of 1907 Ohio would have installed more Independent telephones than the Bell had in the entire United States in 1896.

Theodore Thorward, of South Bend, Ind., told the convention about the proposed long distance lines which would enter Chicago. He gave the delegates every assurance that southern Michigan would have connection with Chicago before the end of the year.

W. B. Woodbury, of Detroit, reported that his company was making rapid progress in the installation of a thoroughly modern system that would probably begin to serve the public October 1st. More than ten thousand subscribers have been secured. Mr. Woodbury also spoke at considerable length regarding the recently organized Interstate Telephone & Telegraph Company, which had been organized to give long distance service in Michigan.

C. E. Tarte, of Grand Rapids, offered the following resolution, which was adopted:

"That the Michigan Independent Telephone Association, appreciating the good work that has been and is being done by the International Independent Telephone Association, and being in thorough accord with its plans for the future, heartily indorse and pledge its liberal support, both financially and morally, to its future success."

The following officers were elected for the ensuing year: President E. B. Fisher, Grand Rapids; secretary, W. S. Vivian; treasurer, A. C. Himebaugh, Burr Oak.

The following delegates were elected to attend the International Independent Telephone Association convention, to be held in Chicago June 4th, 5th and 6th: J. B. Ware, Grand Rapids; W. B. Woodbury, Detroit; A. C. Himebaugh, Burr Oak; W. J. Melchers, Alma; C. E. Tarte, Grand Rapids. Alternates: R. B. McPherson, Howell; R. C. Smith, Homer; C. R. King, Ann Arbor; W. A. Young, Benzonia; H. A. Price, Bay City.

Approximately, one hundred and fifty delegates attended the convention, representing all parts of the state.

Annual Convention of Texas Association.

The Texas Independent Telephone Association held its regular annual meeting at Fort Worth, February 21st and 22nd. In the absence of C. A. Shock, Charles F. Speed, of Texarkana, was appointed temporary secretary.

The subject arousing the greatest interest among the delegates centered upon certain legislative bills that would have a harmful effect upon Independent telephone conditions were they to become law. A committee composed of Messrs. Earle, Martin, Mosely, Samuels and Chamberlin, including the president as *ex-officio* member, was named to draft resolutions. The committee report is given herewith:

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Resolved, In the matter of the physical contact bill, known as House Bill No. 24, that the Independent Telephone Association hereby begs to submit to the legislature now in session that House Bill No. 24, undertaking to force a connection between our properties and those of the Bell Telephone Company, we believe will be disastrous. We respectfully submit that this bill will stop further development and commit the telephone companies to a policy in vogue from the expiration of the Bell patents in 1895. This we declare to be contrary to Democratic principles such as were set forth in the last Democratic convention, as well as the previous conventions, condemning monopoly and forcing competition.

We beg to call the attention of the legislature to the rapid development of the telephone field in the last few years since our home people have undertaken and are building lines in all cities and towns of the state, together with the farmers' rural service that our members have been such extensive builders of.

Resolved, In regard to the rate bill legislation, that we, the Independent Telephone Association of Texas and Louisiana, in convention assembled, hereby petition the legislature not to pass this bill, assuring it that the rates allowed are not only too low to permit a reasonable profit, but we assert that it would be below the actual cost of operation, and the passage of such a bill will be confiscation of our property and would stop all development of the telephone business by both large and small companies over the entire state. The president is hereby instructed to appoint a committee to attend the next meeting of the committee before which this bill will come for consideration and discuss the matter with it.

A committee on ways and means, composed of Messrs. Earle, Speed, Marrs and Davenport, recommended that the by-laws of the association be changed, making the dues 2½ cents per telephone and 2½ cents per circuit mile of toll lines. Individual membership dues to be $1.00 per annum.

The following officers were elected for the ensuing year: J. B. Earle, president; E. M. Chamberlin, vice-president; C. W. Roberts, second vice-president; C. W. Emmer, third vice-president; Charles F. Speed, secretary and treasurer.

The next meeting place will be announced by the executive committee.

Arkansas Independent Convention.

The Arkansas Independent Telephone Association held its annual convention at Hotel Marion, Little Rock, February 18th and 19th. In the absence of J. B. King, Mack Hammett was elected temporary secretary.

President Eugene Hail presided and the morning session of the first day was taken up by a general discussion and the appointment of committees. As in the case of the Texas convention, the Arkansas delegates were confronted with the problem of adverse legislation. The committee instructed to investigate this proposed legislation offered the following resolution, which was adopted:

We, the officers and members of the Arkansas Independent Association, hereby recommend that Senate Bill No. 30, introduced by Mr. Lambert, do not pass, for the following reasons:

First.—It is monopolistic in its nature, because, as we all know, competition helps the general public in all propositions.

Second.—It is our opinion that the passage of a general law compelling two telephone companies to interchange business would result in forcing them to consolidate for their mutual protection. The consequence would be, we believe, a return to conditions practically the same as those prior to the time the patents expired in 1895. There is no line of business in which competition has not been found desirable for the protection of the public, the development of the field and improvement of the service. The results secured in the telephone field since the beginning of competition have amply demonstrated its advantages. Comparatively few people in the United States appreciate the rapid change in the telephone development during the past ten years. Today there are twenty times as many telephones in use in both systems as there were at the time of the inception of competition.

Third.—Should this bill pass, the telephone development would stop, and as in proportion to the stoppage of it the efficiency would also stop, to the disadvantage of the general public.

Fourth.—Section 1, lines 10, 11, 12 and 13, provides that the long distance lines may refuse connections with the local company on the ground that the physical condition of such a company is not sufficient to guarantee good service. It also stipulates that the local company shall comply with regulations of the long distance company, but no provision is made whereby the long distance company shall comply with the regulations of the local company, and it leaves it optional as to whether the long distance company shall make connections or not.

Fifth.—We also further object to the amendment to Section 2, which provides for the payment of ten per cent (10%) to the local companies by the long distance companies for originating business. This, we believe, is unfair and unjust, as it is not sufficient compensation for the amount of service rendered. The originating of telephone business necessitates a certain amount of clerical work, making out accounts, etc., and in the event of poor collections, no collecting agency would take these necessarily small amounts and collect them for the ten per cent, as this amendment provides that the originating company shall pay to the long distance company ninety per cent (90%) of such business at the end of each month, thereby holding the local company responsible for all outgoing messages.

We respectfully ask your honorable body not to pass this bill. It is a matter of vital importance to every citizen of the state of Arkansas, and the passage of the same would work a hardship on the general public by forcing upon them a monopoly in the telephone business.

The following officers were elected for the ensuing year: P. C. Ewing, Little Rock, president; A. E. Boqua, Fort Smith, vice-president; Charles F. Speed, Texarkana, secretary; Mack Hammett, Pine Bluff, treasurer; C. L. Humbert, Jonesboro, trustee.

W. J. Stadelman, traveling secretary of International Association, outlined the work of organization now in force. His address before the meeting was a general review of telephone conditions throughout the country. The delegates extended their thanks to the International Association for sending Mr. Stadelman to the convention.

Current Convention Papers*

OUR LIABILITY BEFORE THE LAW.

WHILE the information concerning the operation of telephone companies, as contained in our constitution, is very meager, we have had for twenty years a general law granting certain rights and privileges to telephone companies, enacted by the legislature of 1887, entitled "An act granting the right of way to telephone and telegraph companies along public highways, and providing for a penalty in case of malicious injury or interference with the same."

The clause in the statute providing that poles shall be set at least six feet within the boundary line has been construed by most companies to mean that poles cannot be set closer to the fences, hedge or line than six feet, but there is no clause that says that they may not be further away. Most people owning property along which the telephone company is extending its line will insist that the poles be set as close to the fence as possible, in order that they may not be an obstruction. This we believe to be a violation of this particular clause, and yet it always gives the best satisfaction to our rural neighbors, for they are always upon the ground and declaring their rights.

In a case that came before the supreme court some time

*Secretaries of the various State associations are invited to send all papers bearing on the Independent telephone situation, no matter what the subject may be, direct to the publisher of this magazine. Co-operation of this kind will have a lasting benefit to the industry we are conscientiously endeavoring to serve.

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ago the court said that a private corporation in the business of operating a telephone plant is a common carrier of news and intelligence, and further, that such a public service corporation is charged with certain public duties, among which are to furnish for a reasonable compensation to any citizen a telephone service, and to charge each patron for the service rendered the same price it charges every other patron under substantially the same conditions.

The power, the jurisdiction, to determine what compensation a public service corporation may exact is a legislative and not a judicial function. If the courts may determine what compensation a telephone company may exact for service, we know of no reason that the courts may determine the freight and passenger rates which the railway corporations of the state may charge.—*Excerpt from a paper read by George E. Becker before the Nebraska telephone convention.*

CHARGING STORAGE BATTERIES.

The storage battery has become a necessary part of most new telephone exchanges, and the available facilities for charging are in many instances the greatest obstacles met with when choosing a system to be used in building a new exchange or remodeling an old one.

In most towns, except in the very smallest, it is possible to get some kind of electric power for at least a few hours each day, but in the majority of places the only available current is alternating, which, without being rectified, is of no service in charging batteries. A question, then, of great importance, is how to get direct current for charging the batteries. If the town in question has a supply of direct current, the problem is easily solved, but if only alternate current is to be had, the question is more serious and requires considerable thought.

The older and probably most generally used pieces of apparatus for charging storage batteries from an alternating current supply are the rotary converter and motor-generator set. Of the two the latter, in my judgment, is the best suited for the purpose, and consists of an alternating current motor directly coupled to a direct current generator of proper design. This arrangement enables the operator to so regulate his current and voltage that he may charge at the proper rates and insure the best efficiency in the working and life of the batteries.

A motor-generator set is unfortunately a naturally inefficient piece of apparatus, and the sizes used in telephone exchanges of a few thousand subscribers and under are so small that the efficiency is very low, in fact at full load the ratio of input to output is seldom if ever more than 65 per cent, while at lighter loads it is reduced greatly, being at one-fourth load under 30 per cent.

In striving to get better charging apparatus the chemical rectifier was developed, the basic principle being that current will flow between certain metals through a proper chemical solution in one direction but not in the opposite direction. This apparatus worked with a fair degree of satisfaction, the principle on which it was worked being correct, but it was able to utilize only one-half of the alternating current wave, which made the efficiency of the complete apparatus considerably below 50 per cent when working under the best conditions. There were also a number of other conditions met with which were not entirely satisfactory, so that at present there are very few of these rectifiers in use.

The latest and probably the simplest and most successful piece of apparatus ever developed to accomplish this purpose is the mercury arc rectifier, its chief advantages being simplicity, absence of moving parts, low first cost, and high efficiency on all loads. The rectifier consists principally of a mercury vapor arc similar in principle to the Cooper-Hewitt mercury arc lamp, its commercial form being a glass tube containing a small amount of mercury and having the air exhausted, causing a partial vacuum. The mercury rests on the bottom, forming a negative pole, or cathode, from which a connection is taken off. Two other terminals, the anodes, are placed on opposite sides of the tubes and a small starting anode is also used. The theory of this action is too complicated to be considered here, but the principle is that under ordinary circumstances mercury vapor, with which the tube is filled, due to the presence of mercury and the fact that the air has been exhausted, is under ordinary circumstances nearly a non-conductor like air, but if by some means it can be ionized it becomes a good conductor, but in one direction only, so by taking advantage of this action the apparatus can be made to deliver direct current at a high efficiency through practically all loads on account of its power to utilize both the positive and negative parts of the alternating current wave.

As an example of relative costs a motor-generator of about three kilowatt capacity on the direct current side, with alternating current motor and the necessary switchboard panel and instruments, would cost about $400, while the mercury arc rectifier of the same capacity with panel and instruments complete would cost about $250. One other item to be taken into consideration with the mercury arc rectifier is that after about 800 or 1,000 hours the tube will have to be renewed, making this cost of renewals about 1 cent per hour of operation.

This matter of choosing the proper apparatus for charging batteries is a very important one, and next to reliability the efficiency of the apparatus chosen should be considered, since lack of efficiency will make itself felt in the size of every power bill, and in most cases will be seen to be of greater importance than first cost. On the whole I believe it can be demonstrated for nearly any particular case that the installation of a mercury arc rectifier would be advisable where only alternating current is available.—*Excerpt from a paper read by Leonard Hurtz before the Nebraska telephone convention.*

EXCHANGE EQUIPMENT.

The size of the exchange and the natural growth or future requirements should be well considered in ordering a new switchboard. In most cases it would be economy to start with at least a hundred number cabinet, even though only twenty-five or thirty drops were to be installed therein. Such a board should be equipped with at least six cord circuits, including double position ringing and listening keys, thus enabling the operators to ring on either end of the line without changing plugs as well as to listen and to cut in a repeating coil if necessary. I say at least six cord circuits—ten are even better, because in a small exchange it is very difficult for an ordinary lineman to give the cord circuits as well as the ringing and listening key the proper attention, and it is better to defer repairing same, provided there are enough extra ones so as to avoid tying up the exchange and sending for an experienced switchboard man.

Naturally a switchboard should be provided with all modern attachments necessary to render good service. This includes night bell circuits and adjustable transmitter and head receiver. If the exchange is small, and party and rural lines are used, combination drops and bells should be used for this purpose. But where an exchange is large enough to require the constant attention of an operator, these should be eliminated, for they cause a great deal of confusion when receiving calls.

Eighty or a hundred ohm drops should be used for all series work, but for heavy party or farm lines one thousand ohm drops are preferable. Selective ringing and even lock-out attachments are a good thing, provided there is competent help to care for them. One of the most difficult things is to impress on the operator or the average lineman the necessity of using a repeating coil where grounded and metallic lines are connected. To obviate this trouble it would be well to use a different size jack and plug for the metallic lines, and equipping certain cord circuits with repeating coils. No call could then be answered by using the wrong cord or plug. If this plan were followed a great deal of cross-talk and poor service would be eliminated. Strange as it may seem, most of the operators, as well as the ordinary linemen, imagine that because they can hear nicely on a metallic and also on a grounded line without using a repeating coil, that one is simply asking them to do something which is not necessary. They do not realize that by disregarding the use of repeating coils they are causing an endless lot of trouble and poor service on the terminal end of the line.

The switchboard should be properly cabled to a distributing board, which, for small exchanges, can be in connection with the ordinary carbon block and fuse board. In fact, it is all that is necessary in any exchange where there is no danger from electric light or power currents, and would apply to most of the exchanges in the western country, as but very few towns have electric light and power circuits. Where the latter exist heat coils should be used, thus guarding against sneak and other foreign currents. Where toll lines are handled in connection with the ordinary exchange timing devices, as well as facilities for handling, toll records should be provided. When the exchange room is used for a public toll station proper railings or counters should be provided to prevent the public from encroaching upon the space needed by the operator in the performance of her duty, as well as to prevent meddlesome people from interfering with the apparatus.

Magneto systems and trunking devices are sufficient until five hundred subscribers are served, and I believe as a rule will give better results than the common battery system. This statement will no doubt be questioned by our common battery friends, but it must be borne in mind that the average small exchange cannot afford to employ an expert who is acquainted with all the details of the common battery system, and unless such a system is well cared for it indeed renders very poor service. In fact, it is a question in my mind whether or not a

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common battery system can give as good service as the ordinary magneto system, the same outside construction being used in both.

The only advantage to be derived from a common battery service in a small exchange is possibly the supervisory or clearing out signals. If lamp supervisories and clearing out signals could be properly used on the magneto board it would be much simpler and cause less annoyance in the small exchange than a common battery system.—*A portion of the address of J. L. W. Zeitlow before the annual convention of the South Dakota telephone convention.*

THE DESPERATION OF OUR OPPONENTS.

"Ruin if we cannot rule," is the only policy that could be reasonably expected from the telephone trust. Absolute control is the only thing that monopoly can feed upon. To concede any part of its control would be to concede all of a monopoly. When it has full sway monopoly sneers at interference. When its sway is in danger, monopoly courts—and if possible seduces—its opponents. But when it is being destroyed—monopoly, like a robber at bay—sells its life as dearly as possible by stabbing its opponents right and left.

When only a few feeble home companies threatened the supremacy of the telephone monopoly, they were served with injunctions, which in a few cases were sustained by the courts. Haughty monopoly carted the alien telephones to the most conspicuous place in the streets and burned them there as a warning against all who might be tempted thereafter to compete with the giant trust. But after years of legal contests, costing hundreds of thousands of dollars, the courts finally conceded to the people the right to make their own instruments.

Monopoly was not yet scared. It rested secure on its assumption that it was so big and strong and shrewd that the people could never duplicate its size or strength or cunning. The assumption that Independent companies could do business at lower rates was laughed at. The thought of the people's companies attempting to master the mysteries of construction and operation of telephone plants was treated with contempt, and capital was warned against the suicidal venture of competing with so terrifying a giant.

So high and mighty were the wires and switchboards and telephones of the monopoly that it was claimed they could not be operated in connection with what their owners asserted to be the cheap and inferior product of the alleged inexperienced Independent manufacturers. But it turned out that among the Independent manufacturers were some men who had been the most efficient and experienced of the monopoly's employes. From their product they eliminated some of the weaknesses of the monopoly apparatus, and they added improvements as a natural result of the stimulus of competition in invention, until there is now a score of manufacturers each putting out equipment superior to anything ever made by the trust. And there are over 7,500 Independent home companies, with over 3,000,000 telephones in service in the United States. These companies are united into local, district and state associations, while the states and the provinces of Canada are united in what is known as the International Independent Telephone Association.

I have wearied you with a repetition of these facts, because I think we need to be reminded at this time of a few things. And after having our own memories revived we need to remind our friends who use our telephones of the same things. We must remember for ourselves and remind our friends that it is a monopoly we are oppressing.

The 1,500 Mutual-Independent telephone companies of Iowa have, almost without a single exception, been organized by representative citizens in their several localities. These representative citizens were all busy people. They had no desire to take upon themselves the burden of building a telephone system; but they had suffered until patience ceased to be a virtue. They had learned from expensive experience that there was no hope of service large enough, good enough, or cheap enough, to be reasonably satisfactory if they depended on a giant monopoly for answers to their feeble petitions.

Therefore, they built local or home companies of their own—fifteen hundred of them in Iowa; almost one for every township in the state. They now have about four times as many telephones, and about nine times as many exchanges as the trust.

They started out hoping to build in each locality a system having about as many subscribers as the trust had secured in its quarter of a century of development. In most cases their rates were only about one-half to one-third as high as the rates then charged by the monopoly. The lower rates and higher grade of service of the home companies demonstrated the fact that the telephone monopoly, like all other monopolies, had been restricting the business; because in many places there are today five to ten times more people's telephones in use as a result of eight years of Independent growth than there was of the trust's instruments in service after eighteen years of monopoly restriction.

The fact is that whereas the monopoly reported a little less than 300,000 subscribers in the whole United States at the time the principal patents expired, the Independents now have ten times that number, or 3,000,000, in service.

Again, we must not forget nor neglect to remind our friends of the fact that so long as it felt secure, the monopoly would not give us a pleasant look.

Neither when we pleaded for more reasonable rates before beginning our Independent plants; nor later when we pleaded for permission to connect with them. In every case our pleas were met with insults, injunctions, and in some cases with the burning of our telephones publicly in the streets, as a warning.

Third, we must keep in our own minds and in the minds of our friends that they said cheaper service could not be given. Whereas, right here in the town in which we are meeting today the direct effect of the home company has been to give for one dollar per month a far better service, connecting with about 2,500 telephones, as against the monopoly original charge of two and a half dollars per month for the old coffee grinder boxes, connecting with only two hundred telephones. Better service, one thousand per cent increase in the number of connections, opportunity to talk to farmers a dozen miles from town; and all this at just two-fifths the original monopoly rate which we were assured was the lowest possible. I fear our friends sometimes forget what we have done for them. Surely we will not be censured for reminding them of these things.

Again, we must remind our friends that in the very nature of things a monopoly's last effort must be an attempt to destroy or ruin.

The life of a monopoly depends of necessity upon restriction. Monopoly prices can only be charged where there is restriction. On the other hand, a monopoly's death must be accompanied by its most violent efforts to destroy its destroyers. Therefore, we must keep in our own memories and make plain to our friends that cut prices or free rates are never offered by monopoly except as a war measure; and that whenever the public has been seduced by such tactics, the monopoly has exacted its pound of flesh, whether the seduction had been accomplished by means of free oil or free telephones. In Iowa just now the telephone trust seems driven to desperation.

It seems to be in the position of the fugitive who has been cornered and is selling his life as dearly as possible in a death struggle against his pursuers. Where they once argued that rates could not be lower than five dollars for business, and two and a half for residence, they are trying to ruin the Independent business by offering service free for a while.

There is only one town of importance in Iowa that has monopoly service without home competition; but many towns have home service without competition. The census report gives the trust only sixty-eight exchanges in Iowa and the Independents six hundred and forty-two, which is nine to one. The Independents have nine-tenths. The trust has one-tenth. No town having home service is asking for the trust to come in and compete, but every place that ever was at the mercy of the trust is anxious to have a people's company as the only means of relief.

Our opponents are desperate. Our safety is in the proper support which we must have from our friends. We must not be lulled to sleep until the trust ceases to be a trust. If it would save its own life it must forsake its trust practices. Let it come down from its haughty attitude of the great and only "I am" of Iowa and become one of the fifteen hundred people's companies, with only one vote against the other 1,500 votes the same as the rest of us. Let it join our association, become a member of our clearing house and treat us as equals. If it will not do that, let us hold it up to our friends for the scorn and contempt it deserves in its death struggle.

It is too much to hope that a trust will ever cease to be a trust. In every case it is beyond hope of redemption.

The trust has paid almost a mint of money for talent to write, and presses to print, and publishers to distribute arguments, tending to prove not merely that the telephone business was, and, in the nature of things, always would be, a monopoly; but that they had the monopoly and proposed to keep it forever.

The expense of all these things has been treated as capital invested for which dividends must be collected or the institution perish. The trust is wedded to its idols. We must let it alone; but we must warn our friends to let it alone also.—A *paper read by C. A. Hollis before the convention of the Northeastern Iowa Telephone Association.*

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Epitome of the Month

PERSONAL.

Orange City, Iowa.—G. W. Lehr has purchased the telephone exchange at this place.

Orleans, Ind.—J. P. Jackson has been given the right of way to erect and maintain telephone lines and poles in this place.

Yampa, Colo.—A. G. Maasdam has sold his interest in the Routt County Mutual Telephone Company to the other stockholders.

Independence, Kas.—A. W. Shulthis of this city is contemplating the installation of an Independent telephone system in Muskogee.

Princess Anne, Md.—Messrs. F. B. Allen and D. E. Peters are organizing a farmers' telephone company to cover the territory from Princess Anne to King's Creek and Revell's Neck.

Reeds, Mo.—W. D. Knight, of Carthage has organized a telephone company to be known as the Reeds Telephone Company. H. R. Shue was elected president of the new corporation.

Memphis, Tenn.—President Harvey Myers, of the Memphis Telephone Company, and George B. Cox, a prominent stockholder, have sold their holdings to local capitalists and will retire from the company.

Holdrege, Neb.—B. F. Boorman, of Lexington, has recently secured control of the Phelps County Telephone Company. Consideration $40,000. Mr. Boorman expects to move to Holdrege April 1 and will then take an active part in the management.

NEW COMPANIES.

Fairview, Kas.—The Fairview Telephone Company has been organized here.

Marion, Ill.—The Farmers' Mutual Telephone Association has been formed here.

Iowa, La.—The Iowa Telephone Company, limited, has been organized. J. F. Denizen, president.

Fairfield, W. Va.—The Rural Telephone Company has been organized and the work of construction has begun.

Morrillton, Ark.—A new telephone system is being organized in the Pleasant Hill neighborhood by J. T. Hill.

Nashville, Ill.—The Farmers' Mutual Telephone Company has been incorporated with a capital stock of $1,000.

Delhi, Okla.—The Delhi Telephone Company, capital $5,000; incorporators, G. W. Jones, W. T. Blair and L. R. Gibson.

Paullina, Iowa.—Paullina Telephone Exchange Company, capital stock, $6,400. G. W. Lyons and others incorporators.

Ladoga, Ind.—Parkersburg Telephone Company, capital $2,000; directors, D. S. Armstrong, J. I. Flanigan, Henry Fall.

Grantsburg, Wis.—The Farmers' Independent Telephone Company has been organized. President, Rev. R. J. Meland.

Landisburg, Pa.—The Perry County Telephone and Telegraph Company has been incorporated with a capital stock of $6,000.

Nova, Ohio.—The Nova Telephone Company has been incorporated with a capital stock of $500 by J. J. Dieter and others.

Dowagiac, Mich.—The Cass County Home Telephone Company, with a capital of $150,000, has been incorporated to operate here.

Fairview, Okla.—The Fairview Southwestern Telephone Company has been incorporated by T. N. Case and others. Capital, $1,000.

Wayland, Ohio.—The Paris Telephone Company has been incorporated; capital stock $10,000; incorporators, J. M. Hurd and others.

Lodore, Va.—The Amelia & Powhattan Telephone Company has been formed with a capital stock of $5,000 by W. H. Graber and others.

Decorah, Iowa.—W. E. Hoyt and others have organized the South Madison Farmers' Telephone Company at this place; capital, $1,750.

Red Willow, Neb.—The Ash Creek Farmers' Mutual Telephone Company has been incorporated by M. Esch and others. Capital, $8,000.

Winona, Mo.—Current River Telephone Company, capital, $10,000; incorporators, J V. Chilton, John Church, James Holland and others.

Iowa Falls, Iowa.—The Iowa Falls, Ellis and Buckeye Mutual Telephone Company has been incorporated with a capital stock of $3,500.

Glen Ullin, N. D.—The Tavis-Moore Telephone Company has been incorporated with a capital stock of $50,000 by L. A. Tavis, W. T. Moore and C. W. Pribbernow.

Galena, Okla.—The Galena Telephone Company has been organized by Van Kretzinger and J. O. Hartman, of Wyanoka, and W. H. E. Kisner, of Galena. Capital, $400.

Cardenas, N. C.—The Cardenas Telephone Company has been organized with a capital stock of $100,000 by James M. Judd, E. W. Burt, S. J. Weathers and others.

Ridgeway, Wis.—The Arena & Rideway Telephone Company has been incorporated with a capital stock of $3,000 by A. W. McKenzie, Alex Hamilton and S. W. Dawson.

Pataskala, Ohio.—The Farmers' Telephone Company has been incorporated with a capital stock of $25,000. A. S. Headley will be general manager of the new company.

Freeport, Ill.—The Northwestern Telephone and Telegraph Company has been incorporated with a capital stock of $30,000 by C. B. Cheadle, Frank Zinnel and L. A. Herrick.

McComb, Okla.—The Farmers' Independent Telephone Company has applied for incorporation papers. Capital, $500; incorporators, R. W. Johnson, J. A. Hunter and others.

Zvalde, Tex.—The Zvalde, Del Rio and San Antonio Telephone Company has been chartered; capital, $30,000; incorporators, J. A. Dean, J. R. Jones, L. A. Field and others.

Eustis, Neb.—The German Northwest Telephone Company has been organized and will incorporate. Henry Roether, president; George Wagner, secretary; Chris Gaibler, treasurer.

Earlsboro, Okla.—The Earlsboro Telephone Company has been incorporated with a capital of $5,000 by James Truner, of Shawnee; William Nottkee and E. G. Alfrey, of Earlsboro.

New Athens, Ill.—The New Athens-Tomorroway Telephone Company, New Athens, has been incorporated with a capital stock of $300 by Frank Reisert, John Koch and Fred Stenzel.

New Lisbon, Wis.—The New Lisbon Mutual Telephone Company has been incorporated with a capital stock of $5,000 by Albert Kilbker, George L. Heath and James D. Strickland.

Soda Springs, Idaho.—The Soda Springs-Lago Telephone Company has been incorporated, with a capital stock of $10,000. Directors: E. D. Witham, J. H. DeWitt and William Anderson.

Prairie du Sac, Wis.—The Farmers' Mutual Telephone Company has been incorporated with a capital stock of $5,000 by Edwin Steidtmann, Henry Thoelke and Fred Waffenschmidt.

Indianapolis, Ind.—The secretary of state has licensed the Parkersburg Telephone Company, of Parkersburg. Capital, $10,000; incorporators, D. S. Armstrong, J. I. Flanigan and Henry Fall.

Colona, Colo.—The Uncompahgre Telephone Company has been organized to build a line from this place to Montrose. Among those interested in the enterprise are A. R. Walker and B. Bower.

Taupa, Okla.—The Farmers' Mutual Telephone Company has been incorporated, with a capital stock of $5,000. Directors, W. S. Kennedy, R. R. Childers, of Taupa, and C. C. Naylor, of Lawton.

Purcell, Mo.—The farmers residing in this vicinity have organized a telephone company and elected the following officers: Joe Herger, president; H. McFerrin, treasurer; J. C. Ross, secretary.

Jersey City, N. J.—The Pennsylvania Telephone Company, to construct telephone and telegraph lines in Pennsylvania, office 242 Washington street, has been incorporated, with a capital stock of $50,000.

Altona, Okla.—The Altona Telephone Company has been incorporated with a capital stock of $2,600 by Harvey Utterback, of Kingfisher; Claud Rohner, John Robinson and J. H. Sanders, of Omega.

Columbus, Ohio.—The Columbus Grove Farmers' Mutual Telephone Company has been incorporated at Columbus by I. B. Good, T. H. Eversole, Isaac E. Bogart, John T. Stoner and James Amstutz.

Glen Jean, W. Va.—The West Virginia Telephone Company has been incorporated with a capital stock of $25,000 by William McKell, Thomas Nichol, W. E. Deegans, C. B. Lee and John B. Hoffmeier.

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FARMINGTON, Mont.—The Farmington Co-operative Telephone Company has been incorporated with a capital stock of $6,000 by H. R. Thompson, of Chotea; R. H. Wright and Ben Bollerud, of Farmington.

CASHION, Okla.—The Interurban Telephone Company of Cashion and Lockridge has been incorporated; capital stock, $500; directors, H. N. Murray, of Cashion, and Edward Ownes and P. T. Binterlof, of Lockridge.

SYLVESTER, Ga.—A state charter has been granted to W. C. Spurlin and others for the Sylvester Telephone & Telegraph Company. Lines will be built to Albany, Tifton, Ashburn and Poulan. The initial capital is $2,500.

TAYLORSVILLE, N. C.—The People's Telephone Company, now being organized with a capital stock of $25,000, has been granted a franchise for the construction of a telephone system from this place to Statesville, N. C.

MUTUAL, Okla.—The Farmers' & Merchants' Telephone Company has filed articles of incorporation. Capital, $4,988; incorporators, A. Huffman, of Mutual; G. C. Harper, of Moscow, and Jacob Feathergill, of Persimmon.

NORWICH, Ohio.—The Norwich Mutual Telephone Company has been organized with the following officers: Dr. E. C. Ledman, president; J. A. Henderson, vice-president; Frank Hadden, treasurer; W. C. Geyer, secretary.

OLD FORT, Ohio.—The Old Fort Mutual Telephone Company, capital stock $10,000, at a recent meeting completed its organization by electing the following officers: President, R. Shannon; secretary, C. T. Anders; treasurer, C. C. Deown.

FARLIN, Iowa.—The Bristol Mutual Telephone Company has been incorporated with a capital stock of $2,500, and the following officers: D. J. Merriam, president; J. R. Matthews, vice-president; E. A. Cairns, secretary, C. F. West, treasurer.

ROGERS, Ark.—The Benton County Rural Telephone Company has been organized here with the following officers: President, F. M. Seamster; secretary, George Vanzant; treasurer, Captain Pickens. Lines will be built all over the county.

DUNKERTON, Iowa.—The North Dunkerton Telephone Company has been incorporated with a capital stock of $5,000, with the following officers: President, Thomas Dunkerton; vice-president, H. F. Meyers; secretary and treasurer, F. C. Dunkerton.

WOLF LAKE, Ill.—The Preston-Union Telephone Company has been organized to construct and operate lines between Wolf Lake and Grand Tower. Thomas Adams, president; E. G. Spring, vice-president; Henry Brown, treasurer; H. C. Wolfe, secretary.

PONTIAC, Ill.—A new Independent telephone company has been organized here with a capital stock of $25,000. The following officers have been elected: President, F. G. White; vice-president, J. A. Marshall; treasurer, R. F. Bradford; secretary, S. E. Sims.

WYLLIESBURG, Va.—Wylliesburg Telephone Company; capital, $5,000; object, to operate telephone lines in Mecklenburg, Halifax and Charlotte counties; officers, W. P. McGuire, president; W. H. Owens, vice-president; A. H. Zollinger, secretary and treasurer.

SOLDIER, Idaho.—A company has been organized here, with Frank Hausman as president, for the purpose of operating telephone lines all through this section of the state. The new company expects to combine with the Mutual Telephone Company, recently organized.

DELL, Mont.—The Dell Telephone Company has been organized with a capital stock of $10,000. Directors: O. C. Gosman, of Lima, and H. Clay Patterson, Frank Nelson, Harry Andrus, Henry Thompson, Walter Crowell, Edgar Kennison, S. M. McKnight and E. M. Martinell.

SEGUIN, Tex.—Three new telephone lines, running from Seguin to points out in the country have been organized by responsible farmers. The Mill Creek Telephone Company (nearly completed), the Delany Telephone Company and the O'Daniel Telephone Company are the names of the new enterprises.

BELLINGHAM, Wash.—The Midway Telephone Company has been organized with the following officers: Henry Richardson, president; N. C. Davenport, vice president; Enos Strode, secretary; J. H. Oltmanns, treasurer. The company is asking for a franchise from the county for the construction of a line from the city limits along the Guide Meridian road to Laurel, and thence to Ferndale.

TOLEDO, Ohio.—The Capital Contracting Company has incorporated with a capital stock of $10,000 by Clement Carpenter, J. A. Barber, G. M. Hannon, Charles Chittenden and R. W. Kirkley. The company will do a contracting business in the Independent telephone field and built plants in some of the smaller towns in the middle west. A number of Toledoans are interested in the concern, as are also several men well known in the Independent telephone field.

RENO, Nev.—Articles of incorporation for the Independent Home Telephone Company have been filed in this city, and the company will ask for a franchise in Reno at the next meeting of the city council. Capital stock, $100,000. Richard Kirman, president of the Farmers and Merchants' National bank, of Reno, is president; W. J. Harris, manager of the Tonopah Banking Association, is vice-president, and F. A. Bonham, a prominent real estate dealer of Reno, is secretary.

ELECTIONS OF OFFICERS.

BLOSERVILLE, Pa.—The Bloserville Telephone Company has elected J. E. Barrick president of the company to succeed J. S. Derr.

CORTLAND, Neb.—The Cortland Telephone Company has elected the following officers: P. H. James, president; H. M. Huestis, secretary and treasurer.

LIBERTY, Mo.—The Clay County Telephone Company has elected the following officers: Wm. B. Smith, president; John Eby, secretary; Ed Hockaday, treasurer.

BROUGHTON, Kas.—The Broughton Short Line Telephone Company has elected the following officers: President, J. W. Carnahan; secretary, J. S. Rutherford; treasurer, J. Graham.

BLOOMINGTON, Ill.—The stockholders of the Kinloch-Bloomington Telephone Company recently held their annual meeting and re-elected the former directors. The officers remain the same.

PETERSBURG, Ind.—The Pike County Telephone Company has elected the following officers for the ensuing year: President, Dr. X. W. Coleman; secretary, W. D. Goad; treasurer, G. J. Nichols.

CHILLICOTHE, Mo.—The Chillicothe-Bedford Telephone Company has elected the following officers for the ensuing year: Freem Reed, president; Joe Winans, treasurer; John Manning, secretary.

CANTON, Ill.—The Canton & Northwestern Telephone Company has elected the following officers for the ensuing year: President, W. H. Tucker; secretary, K. A. Catlett; treasurer, C. C. Eshelam.

CORTLAND, N. Y.—The Cortland Home Telephone Company has elected the following officers: President, C. P. Walrad, Cortland; vice-president, W. W. Nicholson, and secretary, S. C. Ormsbee, Syracuse.

FARMERSBURG, Ind.—The Farmersburg Mutual Telephone Company has elected the following directors: T. H. Kendall, Emery Jenning, Alli Curry, A. J. Akers, Tobe Hook, C. O. Brown and Harvey Lewis.

MT. ZION, Ill.—At the annual meeting of the Mt. Zion Telephone Company the following officers were elected for the ensuing year: Dr. Morris, president; A. R. Williams, vice-president; Levi Huffman, treasurer; Frank Huffman, secretary.

HONOLULU, Hawaii.—The Standard Telephone Company, whose majority stockholder is Guy Owens, the original promoter, has elected the following officers: President, Guy Owens; vice-president, D. P. R. Isenberg; secretary, Harry Armitage; treasurer, H. E. Murray.

FREMONT, Ohio.—At the annual meeting of the Fremont Home Telephone Company Russ J. Christy was named as president to succeed the late Judge Brinkerhoff; James G. Hunt, vice-president; John M. Sherman, treasurer; George Seaman, secretary and general manager.

DAYTON, Ohio.—The Home Telephone Company, at its annual meeting, decided to enlarge the company's plant during the present year and to put out more cable. The following officers were re-elected: President, J. T. Barlow; vice-president, H. C. Kiefaber; secretary and treasurer, J. C. Reber; general manager, J. H. Ainsworth.

PORTLAND, Maine.—At the annual meeting of the stockholders of the Northeastern Telephone Company, the Lewiston-Auburn Telephone Company and the Cumberland Telephone Company the following officers were elected for the ensuing year: Thomas R. Brooks, president; F. E. Ebersole, vice-president and general manager; Edwin W. Gearhart, treasurer.

REDLANDS, Cal.—At the annual meeting of the Southwestern Home Telephone Company the following officers were elected for the ensuing year: President, K. C. Wells; vice-president, A. Gregory; secretary, J. H. Breckenridge; directors, Henry Fuller, J. F. Dostal, C. F. Bigelow and C. C. Parker, of Ban-

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ning. It was decided by the directors to spend $19,000 in extending the lines of the company into new territiry during the coming year. A new switchboard will be installed in the central exchange at Redlands.

TRANSFERS AND FRANCHISES.

CLINTON, Mo.—The Home Telephone Company has asked for a twenty-year franchise.

GRAND RAPIDS, Mich.—The Citizens' Telephone Company has applied for a franchise in Lansing.

GREENFIELD, Iowa.—The Lincoln Mutual Telephone Company has been granted a franchise at this place.

UNION CITY, Mich.—The Southern Michigan Telephone Company has been granted a franchise in this city.

CHARLEROI, Pa.—The Union Telephone Company has been granted a franchise to operate a telephone system in this place.

DEEP CREEK, Wash.—The Deep Creek Telephone Company has been granted a franchise to complete its line to the limits of Medical Lake.

LANTON, Mo.—The State Line Telephone Company has been granted a ten-year franchise to operate a telephone line from this place to Moody.

SOMONAUK, Ill.—The village board has granted a franchise to the Farmers' Telephone Company, which will at once establish a local exchange.

WEATHERFORD, Tex.—The Home Telephone Company has again changed hands, passing under the control of H. L. Mosely and a few local directors.

MIDDLEBORO, Mass.—The Home Automatic Telephone Company has been granted a franchise in this city. The company also has franchises in Brockton and Taunton.

TECUMSEH, Neb.—The Johnson County Telephone Company with headquarters in Tecumseh, has bought the Independent company which has been operating at Smartville.

JASPER, Mo.—A franchise has been granted to the Happy Hollow Telephone Company of the Sheridan neighborhood five miles southeast of town, and the work of construction has already begun.

BRENHAM, Texas.—The Navasota-Washington Telephone Company has been granted a 25-year franchise over the public roads from the Washington county line to Brenham by the board of county commissioners.

FARGO, N. D.—The ordinance granting to the North Dakota Independent Telephone Company the right to do a long distance telephone business in this city was passed at the meeting of the city council on March 4.

GREENFIELD, Iowa.—The Litchfield Mutual Telephone Company, of Adair county, has applied to the city council for a local franchise. The matter will be disposed of by the citizens at the regular March municipal election.

TIFFIN, Ohio.—The Farmers' Mutual Telephone Company, of Seneca township, has been granted a franchise in Hopewell township. W. H. Davidson and J. F. Arbogast, residents of Hopewell township, are interested.

LEXINGTON, Tenn.—The majority stock of the Consolidated Telephone & Telegraph Company has passed from the hands of Dr. J. K. Barlow, of Savannah, and T. S. Hughes, of Clifton, to W. C. Cole and John Speer, of Lynnville and Parsons, respectively.

DOWNEY, Cal.—The Downey Home Telephone Company has petitioned the board of supervisors of the county of Los Angeles for a franchise to conduct a general telephone and telegraph business within the townships of Norwalk, Downey and Los Nietos, in this county.

LARGO, Ind.—Mr. W. O. Taylor, who owns and operates the telephone exchange at this place and at Andrews, has asked for a franchise to construct and maintain a telephone system at Mount Etna. A trunk line will be built between Largo and Andrews, also between Largo and Mount Etna.

HUNTINGDON, Pa.—At a recent meeting of the directors of the Huntingdon & Clearfield Telephone Company, the Indiana Telephone Company and the Cambria County Telephone & Telegraph Company, a formal transfer of the several companies was made to the American Union Telephone Company with headquarters at Harrisburg, Pa.

AVON, S. D.—E. C. Ward, of Geddes, S. D., has recently sold the local exchange and four farmer lines to a company of farmers and business men. The company is incorporated for $5,000 and is called the Farmers' & Merchants' Telephone Company. It has signed a twenty-five year exclusive connection contract with the Missouri River Telephone Company.

CINCINNATI, Ohio.—The Cincinnati Independent Telephone Company has renewed its application for a franchise in this city. The application was made in writing by Charles H. Urban and was accompanied by an ordinance containing the same general provisions as were in the measure introduced some months ago. It is provided that the company has its system in operation within a year after the passage of the ordinance.

SAVANNAH, Tenn.—The Consolidated Telephone & Telegraph Company, which operates in Hardin and Hayne counties and has exchanges at Savannah, Clifton and Haynesboro, has recently been sold by J. K. Barlow and T. S. Hughes to Dr. W. E. Fariss, John W. Speer and T. S. Hughes. The officers are: T. S. Hughes, president; Dr. W. E. Fariss, vice-president; J. W. Speer, secretary. The company will operate under the same name as formerly.

FINANCIAL.

DALEVILLE, Ind.—The Daleville Telephone Company has declared a 4 per cent dividend.

DORSET, Ohio.—The Dorset Telephone Company increased its capital stock from $3,000 to $10,000.

KNAPP, Wis.—The Knapp Telephone Company has increased its capital stock from $5,000 to $15,000.

GALLIPOLIS, Ohio.—The Home Telephone Company has increased its capital stock from $20,000 to $30,000.

BETHALTO, Ill.—The Star Telephone & Telegraph Company has increased its capital stock from $2,500 to $12,000.

LEGRANDE, Ore.—The Home Independent Telephone Company has recently increased its capitalization to $75,000.

LILY, Ky.—The Lily Telephone Company has filed amended articles increasing its capital stock from $3,000 to $6,000.

HEBRON, Ill.—The Farmers' New Era Telephone Company has increased its capital stock from $50,000 to $100,000.

JACKSON, Wis.—The Jackson Telephone Company has filed an amendment increasing its capital stock from $2,000 to $4,000.

NEW LEXINGTON, Ohio.—The Citizens' Independent Telephone Company increased its capital from $50,000 to $100,000.

SANTA BARBARA, Cal.—The Home Telephone & Telegraph Company has increased its capital stock from $200,000 to $300,000.

MANSFIELD, Tex.—The Mansfield Telephone Company, Terrant county, has increased its capital stock from $16,000 to $25,000.

CEDAR GROVE, Wis.—The Cedar Grove Telephone Company has filed an amendment increasing its capital stock from $3,000 to $5,000.

FILLEY, Neb.—The Filley Independent Telephone Company has increased its capital stock from $3,000 to $9,000. The company will extend and improve its system.

SEWARD, Neb.—The Seward County Telephone Company has voted to increase its capital stock from $50,000 to $100,000, for the purpose of constructing several new lines.

PARIS, Ill.—The location of the Mississippi Valley Telephone company has been changed from Marshall to Paris, and its capital stock increased from $125,000 to $400,000.

MONROE CITY, Ind.—The Wabash Home Telephone Company has increased its capital stock from $25,000 to $40,000. Dr. J. M. Goldman, president, and Edw. P. Blain, secretary.

MINNEAPOLIS, Minn.—The directors of the Tri-State Telephone Company have declared the fifteenth quarterly dividend at the rate of 6 per cent per annum on the preferred stock of the company.

ALBANY, N. Y.—The Wiltseville Telephone Company of Oswego county, filed a certificate with the secretary of state announcing that the amount of its capital stock has been increased from $480 to $2,010.

NEW CONSTRUCTION AND EXTENSIONS.

SULLIVAN, Wis.—The Sullivan Telephone Company is extending its line to Concord.

ADGER, Ala.—The North Johns Telephone Company is busy erecting a line into Virginia City.

WEBLAKE, Wis.—The St. Croix Mutual Telephone Company will build a line from this place to Orange.

MT. PULASKI, Ill.—The Mt. Pulaski Telephone Company will lay about 30,000 pounds of cable underground.

ATHENSVILLE, Ill.—The Illinois Telephone Company will construct a line from Athensville to Roodhouse.

CORYDON, Ind.—The Eureka Telephone Company will probably extend its system to every part of Harrison county.

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CANTON, Ill.—The Canton & Northwestern Telephone Company is planning to construct a line from Canton to Fairview.

COSHOCTON, Ohio.—The Citizens' Telephone Company is making improvements in its system which will cost over $6,000.

MERRILL, Iowa.—The Farmers' Mutual Telephone Company has awarded a contract for the construction of a rural line from Merrill.

EVELETH, Minn.—A toll line between this city and Iron Junction has just been completed by the Mesaba Telephone Company.

FARGO, N. D.—The trunk line of the North Dakota Independent Telephone Company has been completed between Fargo and Glendive.

LEAVENWORTH, Kas.—The new plant of the People's Home Telephone Company has been completed with the exception of the interior finishing.

GRANT CITY, Mo.—The Grant City Mutual Telephone Company has arranged to put in a new commercial wire between Grant City and Worth.

AVA, N. Y.—Among the improvements planned for the East Ava Telephone Company is the stringing of about thirty-eight miles of additional wire.

MANSFIELD, Ohio.—The Mansfield Telephone Company is making outside improvements in its service, the expense of which will aggregate about $10,000.

ZOLLARSVILLE, Pa.—The Home Mutual Telephone Company is building a line from this place to Scenery Hill and expects ultimately to reach Washington.

RICHMOND, Ind.—The Home Telephone Company will erect three sub-stations in the city which will be fitted with complete automatic switchboard apparatus.

TRINITY CENTER, Cal.—A telephone line from Sisson by way of Trinity Center to Weaverville will be built this summer by the forest bureau as a part of the system of fire patrol.

GRAFTON, W. Va.—It is reported that the Consolidated Telephone Company will extend its system, install additional equipment and make other improvements, expending about $8,000.

MARYSVILLE, Ohio.—The Union County Telephone Company has added a new toll line switchboard to its equipment and will build a line from Marysville to Richwood as soon as the weather will permit.

MOLINE, Ill.—The Coles County Telephone and Telegraph Company has arranged to make some radical changes in its equipment and plant. A new central energy switchboard will be installed.

LEBANON, Ind.—The Lebanon Telephone Company is planning for extensive improvements in the physical features of its plant. As a means to that end an issue of $150,000 in bonds is contemplated.

GEDDES, S. D.—The Missouri River Telephone Company is making many improvements and extensions in its system. Mr. E. C. Ward, secretary and general manager, announces that much construction is being planned throughout the state.

MILWAUKEE, Wis.—Contracts have been closed in New York by H. D. Critchfield, of the Milwaukee Independent Telephone Company, for 2,000,000 feet of conduit to be used in underground lines in Milwaukee. The contract involves a cost of $100,000.

CASPER, Wyo.—The telephone service of Casper is to be made better by the installation of an entirely new central equipment. Heretofore telephone instruments have been supplied with individual batteries, but the new arrangement is the common battery system.

BOWLING GREEN, Mo.—At a meeting of the stockholders of the Pike County Independent Telephone Company it was voted to buy a switchboard at once and a committee of ten was appointed to make the purchase. The money for the board was raised at the meeting.

OZONA, Texas.—A telephone line will be constructed from Sheffield, Becos county, to this place, by Garrett Bean and Ed Miller, of Sheffield. The distance is forty-one miles. Construction work will be begun at once. A local exchange will also be established at Sheffield.

SPRINGFIELD, Mo.—The Springfield Home Telephone Company will erect a new exchange building at a cost of $20,000, and install new equipment which will make the plant one of the best of its kind west of the Mississippi river. Forty thousand dollars will be expended in new equipment.

HOME CITY, Ohio.—The Home City Mutual Telephone Company at its last annual meeting decided to make many improvements and elected the following officers for the ensuing year: President, C. A. Balderson; vice-president, Peter Lindenberg; secretary, E. H. Tangeman; treasurer, D. H. Beavers.

NAVASOTA, Texas.—The Navasota Telephone & Construction Company has received a consignment of 30,000 pounds of line wire for the extension of the local service and spreading of the system into the surrounding territory. The long distance line between Roans Prairie and Bedias will immediately be put in first-class shape.

HERRON, Ill.—At the annual meeting of the stockholders of the New Era Telephone Company it was voted to increase the capital stock from $50,000 to $100,000. This action was taken with the view of extending the lines of the company into new territory and to further develop the present system. George A. Hunt was re-elected president.

SIOUX CITY, Iowa.—More than 600 new towns and cities in southwestern Iowa and Nebraska were connected with Sioux City recently by the New State Telephone Company, which has completed its line to Council Bluffs and South Omaha. Within a short time telephones will be installed in Omaha and Sioux City will be connected with the Nebraska metropolis.

IOWA CITY, Iowa.—A telephone system, costing more than $10,000, will be constructed between Iowa City and Ottumwa, if the Independent company at Ottumwa consents. The Johnson County Telephone Company and the Independent company at Washington have agreed to bear their portion of the expense, and only await a pledge from the Ottumwa company to begin actual stringing of the copper. This, alone, will cost more than $100 a mile.

CANADA.

WATERFORD, Ont.—The Norfolk County Telephone Company, Limited; capital, $40,000.

TORONTO, Ont.—The Conduits Company, Limited, has increased its capital stock from $40,000 to $100,000.

CAYAGA, Ont.—The village council has granted a fifteen-year franchise to the Erie Telephone Company, whose interests were represented by President George E. Dashner, of Fisherville.

DUNNVILLE, Ont.—The Dunnville Consolidated Telephone Company has purchased from the Great Northwestern Telegraph Company a line of poles with wire thirty-two miles long, extending from Dunnville to Caledonia. The company has also secured a franchise from Caledonia village.

CALGARY, Alberta.—The provincial government has decided to build a third long distance line. It will run from Lacombe to Stettler, a distance of fifty-one miles, with local exchanges at all towns on the route. W. H. Cushing, minister of works, Calgary, Alberta, has charge of the contract.

MISCELLANEOUS.

MONTEREY, Mexico.—A company has been formed by Monterey capitalists to construct a telephone line between the towns of Montemorelos and Reyones.

PORTAGE, Wis.—The Central Wisconsin Telephone Company has filed an amendment changing its name to the Central Wisconsin Long Distance Telephone Company.

CONCORDIA, Kas.—The Concordia Telephone Company has made arrangements to connect for a term of five years with the Farmers' Telephone Company operating in Lincoln township.

CLAY CENTER, Neb.—Representatives of the several leading Independent telephone companies of the county met here and took steps for the organization of a county association. C. C. Avery, of Edgar, was elected president of the temporary organization.

SCHUYLER, Neb.—The county commissioners have been petitioned by the West Maple Valley Telephone Company and the Big Four Telephone Company to be allowed to set poles and string wires along the public highways leading from the south side of the township to Clarkson.

JAMESTOWN, N. Y.—A movement is on foot here backed by the alderman to buy the plant of the Home Telephone Company and run it as a municipal enterprise. It is said the price would be about $25,000. The city has been having trouble with competing companies and fears an absorption of the Home company.

LANSING, MICH.—A bill has been passed by the house which gives township boards, village and city councils control over the erection of all poles and lines, and in places where two companies operate lines, compels them to conduct their exchanges so patrons may originate calls on one line and have them sent to a patron of the other line. The cost of the exchange arrangement to be fixed by township boards, village and city councils.

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Province of Manitoba*

Bulletin No. 6

THE legislature has passed the telephone amendments which have special reference to Manitoba. Attorney General Colin H. Campbell, in moving the third reading of the telephone bill, further exposed the pernicious methods employed by the Bell at Winnipeg during the campaign, and warned the city council that the government will not be thwarted in its efforts to extend telephone competition.

Mr. Campbell's brief address follows:

I would like to call the attention of the house and those who are interested in the telephone situation to this fact, that notwithstanding the declaration of the executive of the liberal union and the somersault of Mr. Brown, the danger point is not yet past, and we must beware of the further intrigues that are going on. We have had recent evidence of this in the city of Winnipeg. The house will remember that the municipal union passed resolution No. 3.

The representatives of Winnipeg on the municipal union concurred in this resolution:

"That, in the opinion of the executive, it is essential for the success of a publicly-owned telephone system throughout the province of Manitoba that local exchanges should be built in the chief centers, such as Winnipeg, Brandon and Portage la Prairie, therefore it is desirable, should these municipalities take no action in the mater of establishing municipal telephone systems by the first of April next, that upon receiving a requisition from a sufficient number of rate-payers desiring to become users of the telephone to enable systems to be constructed in these respective centers upon a remunerative basis, the government shall proceed without delay to establish a local exchange telephone service in any one of these places, or in all of them."

The mayor and the controllers of the city of Winnipeg recently passed a resolution that the construction ought not to begin until after April 1, 1908. This is a most extraordinary proceeding, after the vote of the people. I will take the house back just a short distance to the month of November last. It was necessary that the city of Winnipeg should pass a by-law to submit the telephone question to the people. It had come to the last night and there were rumors around of some stragetic movement on the part of the monopoly, the Bell Company. When it came to the last meeting at which the by-law could be passed as I have said, and it was necessary that the by-law be passed, otherwise a vote could not be taken, we find that two of the aldermen, one of whom is now a controller, namely, Alderman Cockburn and Alderman Cox, deliberately left the council room in order to break up the necessary quorum for the passing of the by-law. I make this statement on the authority of ex-Mayor Sharpe and some of the other gentlemen who were then in the council. However, Mr. Speaker, they miscalculated. While they no doubt thought they had gained their purpose and they would have created no quorum by so doing, they miscalculated and forgot that Elmwood had been added to the city, and the quorum still remained at seven and was not eight as they evidently thought it was. So, gentlemen, they were thwarted, not because they desired to be, but simply because they miscalculated. Now, sir, I say that we doubt the sincerity of gentlemen like these, and we are, I believe, justified in concluding that it was done solely for a political purpose, and that they do not believe in municipal ownership. The Bell Company is manipulating for delay, and it seems to me that these gentlemen are anxious to serve it. I am all the more convinced of this from the attitude it takes in politics, and its sincerity can best be tested by its appearance as the mover and seconder of the liberal candidate in North Winnipeg. Now, sir, I do not know what the purpose is in these controllers asking for delay to the first of April, 1908, before coming to a decision. This virtually means that we would have no telephone competition in Winnipeg for several years. This is not what I believed the city meant by its vote, and what the country looks forward to. This manœuvre certainly justifies a suspicion that although the Bell Company got tired of its allies after the recent somersault of the executive, and the leader, Mr. Brown, there is a desire for some of these interests to again work with this monopoly and obtain its support in the approaching elections. I regret very much that these Winnipeg aldermen should, apparently, endeavor to set themselves in hostile array against the rest of the province, and, sir, I do not think that Winnipeg is in such hostility and I further think that the controllers do not represent the people in this respect. I mention this, however, simply to point out that strong vigilance is the price of our liberty in this matter, and we will have to carefully view and question all the candidates as to their genuineness, otherwise we may have a betrayal of interests in this direction, and this is all the more requisite when we have nominated at Brandon ex-Mayor Fleming, who so ingloriously tried to serve them and betray municipal interests.

We had recently in a committee of this house a somewhat tender solicitation for this giant monopoly, second only to the Standard Oil Company on this continent. The poor man and every other man in this city has to pay taxes on an assessment of about 80 per cent, but when it comes to an assessment of this monopoly we find the same gentlemen very anxious and desirous that their assessment should only be at the rate of 50 per cent of the value of its assets. It does seem to me that evidently this was done for a purpose, and the electors of Winnipeg and also the electors of the province will be untrue to themselves if they do not view with disfavor and also apprehension as to their sincerity of the men who come forward backing the interests for whom this manipulation was done. I can assure the city council of Winnipeg and the citizens of Winnipeg that the government does not desire to usurp the municipal functions of Winnipeg, and hope that they will be able to build their own municipal telephone system. While it may be true that at the present time, like nearly all other municipalities, Winnipeg is experiencing some difficulty in the disposition of its debentures, I am glad to say that the province has such a credit, the highest in Canada, that it will find no difficulty whatever in disposing of its debentures at a magnificent figure. I wish also to assure the city council that it will be fully consulted before the government proceeds, but I desire at the same time to say, and to say it emphatically, that we will not allow any intrigue to thwart the unanimous desire of the people of this province and the municipalities of this province in the consummation of a scheme that is destined to bring and to do so much good to the great agricultural interests of this province.

*Persons interested in the telephone situation in the Province of Manitoba should address Mr. F. Dagger, Provincial Telephone Expert, Parliament building, Winnipeg, Manitoba.

Wallace Wants Telephones.

A meeting of the ratepayers of Wallace municipality was held at Virden recently to discuss the desirability of establishing a municipal telephone system in accordance with the by-law in the government's legislation, which passed in December last. There was a large attendance, Ex-Reeve Odell presiding, and Reeve Stinson, and Telephone Expert Francis Dagger addressed the meeting. Mr. Dagger pointed out the importance of the telephone to the farmer, and stated that provided sufficient subscribers were obtained a service could be given at $12 per annum or at less than 25 cents a week. It was necessary, however, for the council to secure the names of those who were willing to rent telephones, the location of their houses, etc., before definite figures as to cost of construction, revenue, and maintenance could be arrived at.

Mr. Dagger produced a plan showing that without taking the towns and villages, there were 455 houses within the municipality and that to connect these it would be necessary to build 345 miles of pole line if a sufficient number of farmers took telephones. Twelve dollars per annum would be ample to meet all expenses, but in any event he was satisfied that $15 would be a safe maximum rate. Mr. Dagger pointed out at some length the many advantages of the telephone in rural districts, in its business, domestic and social usefulness, and in his lucid answers to numerous questions gave a mass of valuable information upon the subject.

The meeting was called for the purpose of obtaining the signatures of those ratepayers who were willing to

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take telephones. After a number of questions had been answered by Mr. Dagger every ratepayer in the municipality present signed an undertaking to become a subscriber at a maximum rental of $15. A number of Virden ratepayers were present, who expressed a strong desire that the town of Virden should be included in the proposition, all of them agreeing to take telephones if a joint system could be arranged. It is anticipated that a scheme will be devised whereby a complete municipal system covering the municipality of Wallace and the towns of Virden and Elkhorn will be established. The Wallace council will authorize a systematic canvass of the whole municipality, and consider other matters pertaining to the establishment, at an early date, of what will be the first municipal telephone system in the province under the government's recent legislation. There are already indications that the adjoining municipality of Pipestone is desirous of following Wallace's lead and there is no doubt whatever that once the Wallace system is started, other municipalities will follow its example in quick succession.

Progress in the West.

In view of the early assembly of the legislature the representative of the Winnipeg *Telegram* waited upon the leader of the opposition, Hon. F. W. G. Haultain, in order to obtain his views regarding current questions, particularly those now engaging the attention of the federal or neighboring provincial governing bodies, such as the principle involved in government ownership and operation of telephones, and various other subjects.

In regard to the public ownership of telephones, Mr. Haultain finds himself in hearty agreement with the attitude of Manitoba on the one hand and Alberta on the other. "Manitoba has done the spade work in this direction," he said, "and I am glad to see that the Alberta government is taking this very important question up in a practical spirit. Indeed, from the reports I have seen, it appears that the administration of Mr. Rutherford is prepared to go even further in the direction of government ownership and operation than Manitoba, where both parties appear to have agreed on the common principle. There is no doubt that a cheap and readily extended telephone service is invaluable to the development of a community consisting largely of farmers, as it brings these into direct touch with their markets—often a matter of prime consideration—and also brings about a hardly less valuable intercourse between town and country which is of mutual advantage in many ways. Under present conditions—that is, control of our telephone systems by the Bell Company—prices and terms of operation are such as put farmers' exchanges entirely out of the field, while towns and cities are obliged to pay exorbitant rates for very unsatisfactory service.

"Abuses have arisen altogether beyond the control of the government and such as can only be remedied by the institution and operation of a government system of telephones. So much has been established by the active campaign undertaken by our neighbor provinces, and I am of the opinion that this is so urgent a matter as to justify the passing of constructive legislation during the coming session in the Saskatchewan house."

The Government and the Bell Monopoly.

Government ownership of the trunk lines of the province, public ownership and operation of municipal lines where necessary, and public ownership, construction and operation of a system of rural telephones, is briefly a telephone policy enunciated by the legislature by the Hon. Mr. Cushing, minister of public works, says the Calgary Weekly *Herald*.

The *Herald* has no hesitation in according to the member for Calgary congratulations on the strength and logical nature of the plan by which he proposed to solve the future of universal telephones in Alberta.

It will naturally be seen that unless the Bell people fall into line (which no one expects such a strongly entrenched monopoly to do without a strenuous fight), a serious conflict will be precipitated. Anyway, interesting developments may be looked for in the working out of the scheme.

It must be remembered that the Bell Telephone Company carries on its operations under a charter granted by the federal government, and any encroachment by the province on its rights under that charter may place the provincial legislature and the dominion house at variance.

Just how Mr. Cushing proposes to deal with existing Bell systems is not quite clear, but it may be inferred that he proposes to compete with them. The municipalities also are in a position to tax the monopolistic systems very heavily and exempt the government systems from taxes, and thus handicap the Bell people right from the start. This outlined legislation may have an alternative effect on the proposed Calgary municipal telephone system, but there will probably be an object lesson for the rest of the dominion in the way of a strenuous fight before the Bell system is driven from the province, as it will eventually be if this legislation is carried out in its entirety.

Saskatchewan for Public Ownership.

At the opening of the provincial legislature Mr. Sutherland in moving the address in reply to the speech from the throne, said regarding the telephone question:

"Another matter that requires serious consideration is the question of telephones. Some time ago a royal commission was appointed to look into this question and from the evidence it does not appear to be in the best interests of the public to allow a large corporation to secure control of the telephone system of a province, because, as in the case of the Bell Company, it is big and strong enough to enter into agreement with railway and other companies, and having control of the long distance lines is able to kill out all competition and to fix rates at a figure which it may consider fair, but which the public does not. This is a matter I have no doubt will be taken up by the government."

Grain Growers Want Telephones.

At the annual convention of the Saskatchewan Grain Growers' Association the following resolution was passed unanimously amid cheers:

"Resolved by the Saskatchewan Grain Growers' Association in convention assembled, that the time has arrived for the installation of a provincial telephone system, owned and operated by the government."

Want Government Telephones.

At the annual meeting of the Baldur branch of the Grain Growers' Association a resolution was moved by A. W. Playfair and seconded by W. B. Cornock, and unanimously carried, "That it is in the interests of the people of this province that the government own and operate a telephone system, and that a copy of this resolution be sent to the Winnipeg *Telegram*."

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The People's Verdict.

Independent telephone men will be pleased to learn that the elections for the representatives for the legislative assembly in the province of Manitoba have resulted in the return to power of Premier Roblin and his supporters. It is not usual for a technical or industrial journal to take any part or interest in political matters, and it would indeed be bad policy if such a practice became general. In the case of the recent elections in Manitoba, however, the fact that a government which had previously pledged itself to the policy of establishing a telephone service to be owned and operated by the people has been returned to power by a substantial majority is one of more than ordinary interest to Independent telephone men.

It will be remembered that in December last a vote was taken at the Manitoba municipal elections as to whether the people should own and operate their own telephone service. The result of the municipal vote was decidedly in the affirmative and administered a severe rebuke to the Bell monopoly. Critics, however, endeavored to minimize the importance of the municipal vote by the fact that it represented the views of only a small percentage of the inhabitants of the province. This was due to the fact that at the municipal elections only those ratepayers having a property assessment of $400 and over were qualified to vote on the telephone question, and this very condition only emphasized the victory, for the reason that the people who voted were those who would shoulder the responsibility, if any existed, of the possible failure of a publicly owned telephone system.

The result of the recent provincial elections, however, cannot be questioned by these Bell critics, because there were no such limitations regarding voting qualifications as those which applied to the municipal elections in December last. Every male adult having resided twelve months in the province was entitled to vote in the latter elections, and therefore it cannot be argued that the result of the verdict is not a representative one. While it would hardly be correct to say that the telephone question was the main issue in the provincial election, there is no question that it formed a very important plank in the government platform.

There is no doubt the opposite party received the cooperation and assistance of the Bell monopoly and its friends in its endeavor to overthrow the government, which in a very practical way had demonstrated its intention to relieve the people from the arrogance and extortion of Bell telephone rule.

The verdict of the people of Manitoba not only augurs well for the future of the telephone service in that province, but its influence will be felt in all parts of the Dominion. Further than this, it is an object lesson to the people of the United States as an illustration of the fact that, notwithstanding the influence and power of the monopolistic corporations in high places, the people are kings, once they make up their mind on a great public question.

To Guard the Public Interests.

A special meeting of the common council has been called to discuss and pass resolutions on the telephone bill which is before the legislature at Fredericton.

This matter was discussed at the recent meeting of the Union of New Brunswick Municipalities, and it was decided to urge upon the government that they exercise the utmost care in dealing with the bill.

The bill provides for an increase in the capitalization of the New Brunswick Telephone Company to $2,000,000 and the granting of a new charter.

Several of the municipal councils and boards of trade throughout the province have already forwarded resolutions urging that great care be taken in dealing with the bill, and that the representatives in the government use every endeavor to guard the interests of the towns and municipalities insofar as the bill relates to them.

It is stated that the company is seeking a monopoly, and in such case the government should retain to itself the power of supervision and control of the acts and regulations of the company.

Mayor Sears, as president of the New Brunswick municipalities, will go to Fredericton, where he will oppose the objectionable features of the bill.

Brandon People Are Complaining.

For some months past the service given by the Bell Telephone Company to the citizens of Brandon has been going from bad to worse, and lately it has gone beyond toleration. As a result of this so many complaints have been made to headquarters by prominent citizens, that General Manager Patterson, with two inspectors, will make a thorough investigation.

It has been a common occurrence to wait anywhere from two to six minutes before central will answer a call, and subscribers are told that the "lines are busy," and find out later, through inquiry, that the line has not been in use at all.

Complete Government Ownership of Telephones.

What is probably the most important declaration ever made by any western provincial government was made by the minister of public works in the Alberta house when he gave utterance to the government's policy on the telephone question. Briefly, the government is not only going to go into the long distance business on a huge scale, but is going to supply all cities, towns, rural municipalities and local improvement districts that want them with telephones at the lowest possible price, the province undertaking the installation, operation and maintenance of the whole system all over the province.

The minister did not state any figures, but private members announced tonight their belief that Alberta sould supply farmers with telephones at $10 to $12 a year and give long distance connection for little more than the cost of a postage stamp.

The minister's speech, which was brought out in reply to a question by F. E. Walker as to what the government's policy was on the telephone question, was absolutely unequivocating. He said in part:

"I have looked at this matter and every member of the government has looked at it in the same light that the introduction of the principle of public ownership of telephones in the province was the most important step yet taken.

"The administration, believing it to be in the best interests of the people of Alberta, is prepared to take a stand for this principle."

In turning to the subject of the Bell company he said that it was well known that it was a monopoly. The stock was badly watered. Various commissions had been appointed to investigate, but so far nothing had been accomplished. The province, he said, was invaded by this monopoly under a charter granted by the federal government at Ottawa in 1880, the most iniquitous piece of legislation ever practiced on any people claiming freedom; the most extraordinary charter, in fact, ever granted by any parliament.

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Only recently the government of Ottawa appointed a commission to inquire into the trouble at Toronto and was politely informed that the company does not intend to be governed by the findings of the commission.

The Alberta government, he said, believes that if it has any functions at all it is to protect the people from such monopolies. The opinion of the government is that the only way to regulate such a monopoly is to enter into competition and insure low rates and proper service.

"We desire," he said, "to create means by which the farmer will secure the business advantages that will result from the introduction of a system of municipal telephones throughout Alberta. Last session legislation was enacted that made it possible for the people to operate their own systems, the province to supply the trunk lines. A line from Calgary to Banff has been built. The government has already contracted for wires and poles for all that could be built this year. Five hundred miles between Lloydminster, Edmonton and Calgary are to be built at once.

"After a thorough investigation the government has arrived at a decision that in order to make a success of the venture it will be necessary to enlarge the scope and install and operate exchanges in all municipalities that may not wish to own and operate their own exchanges and build their own rural lines. It is our aspiration to serve the people. It is a national policy, a new, progressive and inspiring departure in this country, and the government gives a clear, bold enunciation that Alberta is in the telephone business to stay and for the public good."

John T. Moore on the Telephone Policy.

Following is a verbatim report of the speech of John T. Moore of Red Deer on the subject of government owned telephones:

This is the day that will live in the history of Alberta. The measures that have already been taken by the administration have attracted very wide attention. The *Mail and Empire* of Toronto in a recent issue puts in black head lines the statement that "Alberta leads the Dominion of Canada in public ownership of its telephone lines."

The satisfaction which I personally feel at the clear and unmistakable announcement that has been made by the government today I am not able to frame in words, and I feel sure this satisfaction will extend to every home in this province. This policy will go far to dispel the feeling of isolation and loneliness peculiar to life upon the frontier. This, therefore, is a day bringing glad tidings that will spread like wildfire. The good news will be clicked by telegraph and sounded by telephone until, when the message reaches the Atlantic seaboard, it will be shot from the Marconi towers across the sea that in the Dominion of Canada the province of Alberta leads the van in the matter of telephone ownership.

This is "emancipation day" in a very broad sense. It will give joy to the people within our province to know that this is the character of the government we possess; and, furthermore, it will give hope to others who are struggling against this same incubus in other provinces, and it will make them take heart and feel that they will not abandon the struggle until they win in the fight.

Therefore I say Alberta kindles today a beacon light of wise legislation that will illumine the pages of history for many years to come.

Government, municipal or corporation ownership of anything, and the administration of that thing, must be judged according to the fruits thereof. Whatever produces the best success is entitled to the palm. The conditions that make for success must always be present. I believe we have a government possessing these conditions—a government that will carry out this undertaking with ability and courage. Our administration, I feel confident, will demonstrate that this public service can be carried on with great advantage to the people and with profit to the province.

The Bell Telephone Company, judging by its fruits, should have been hewn down long ago. Bad, unquestionably bad, those fruits are, and therefore it is that in this assembly the watchword today is: "Ring out the old, ring in the new." This is the people's day, and they will rejoice at this proof that they have a government which is truly "by the people and for the people."

The Honorable Mr. Hiebert, of Rosebud, gives it as his opinion that the Bell Company has no absolute monopoly. No doubt he is speaking according to his light, but I think the honorable gentleman enjoys an absolute monopoly of this opinion. He further remarks that the proof of the pudding is in the eating. I advise him to confine his attention to pudding, concerning which he is no doubt a better judge than he is about monopolies.

Yonder in Montreal there is a man appropriately named Sise, the Napoleon of the Bell Telephone Company. It is said, "Whom the gods wish to destroy they first make mad." What has he done in response to the request made upon him that his company would regard the recommendations of the Dominion commissioners? He has raised his clenched fist in the face of the creator of that company and defied the federal power. He may be a Napoleon, but fortunately Alberta has a Wellington, and today the Bell Telephone Company meets its Waterloo.

We can say and say truthfully that Alberta leads the Dominion in the matter of public ownership of telephones. More than this, Alberta leads the American Union. Furthermore, Alberta leads the continent of North America. Appealing hands have been held forth to this government that there might be a breaking of the manacles which bound the people in this particular. Those appealing hands have not been lifted in vain.

St. Valentine's Day! The government of Alberta presents a valentine to the beloved people of Alberta, and the people reciprocate and will be faithful and true to their first love, for by this day's work they will remain wedded for years to come more firmly than ever to this splendid government.

As the honorable member for Wetaskiwin, Mr. Rosenroll, has informed us, his constituents had an experience—not very pleasant—with the Bell Telephone Company. Red Deer also can relate an experience wherein a local company has fought the Bell and won a complete victory. Four years ago Alberta had no long distance service, and the Western organized to supply this, as well as the local exchange at Red Deer. The Bell then got busy and built a long distance line from Calgary to Edmonton, with a local exchange only at Red Deer, obtaining some forty subscribers in the latter town, mostly upon three year contracts, $30 for business and $20 for residence telephones, magneto system and day service. The Western could not be ready till the following year. Then it installed a central energy system of finest and best equipment throughout—day and night service—$25 for business and $10 for residence telephones, and what is the result? I am credibly informed that the Bell has not got ten paid telephones in the town of Red Deer, while the Western is now passing the two hundred mark—a record for the Dominion, according to population. Red Deer therefore has fought and won.

Mr. Sise, the Bell-shazzar of this telephone company, as he sits in Montreal, might see on the walls of his palace, "*Mene, mene, tekel upharsin*"—thou art weighed in the balance and found wanting. Thy kingdom in Alberta is to be taken away and the people will come into their own. This means that life in Alberta is going to be worth living, in so far as the telephone will accomplish that purpose, and that the welfare, comfort and prosperity of the people is the matter of first and greatest consideration by this government. Is it not a great boon that the loneliness of womankind, patiently toiling in scattered homes, is to be done away with? Few realize the terrible injury that has been wrought by isolation. Many instances of insanity might have been averted if the tension of solitude had been broken by messages of cheer and comradeship. Many valuable lives can be saved in cases of accident, sickness and emergency by speedy communication with medical aid. Besides these humane considerations, the social and commercial advantages that will be brought to the farm and to the ranch through the policy that is laid down by the honorable minister of public works in this house today are almost incalculable. American settlers have been accustomed to the use of the telephone, and they will welcome this news. It will promote and stimulate settlement and development by these desirable people, who want to preserve touch and connection with the business and social world, and who find this connection in the telephone in the house.

Therefore we welcome the advent of this new era, which will witness ever increasing thousands of our people being bound together with cords of copper and of steel. Thus commerce will be stimulated, time and money will be saved, friendship will be promoted, sociability will be encouraged, and these ever extending wires will not only bring pecuniary profit to the people and to the province, but will also carry to hundreds and thousands of our citizens welcome messages of hope and encouragement, of peace and good will. (Prolonged applause.)

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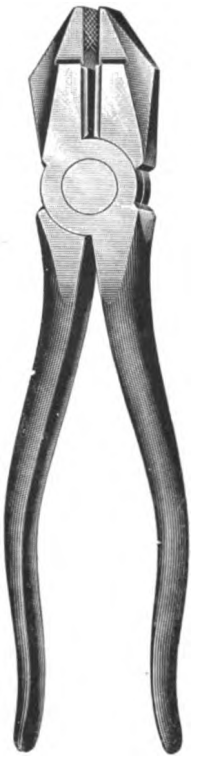

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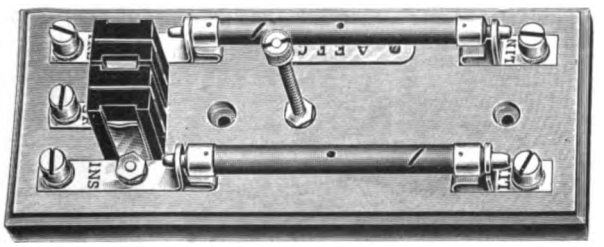

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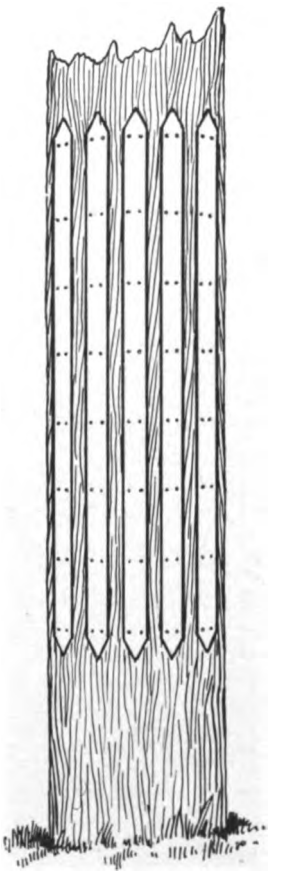

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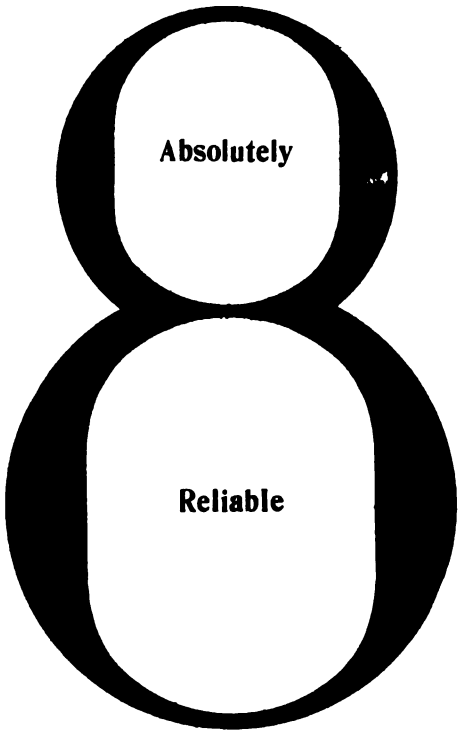

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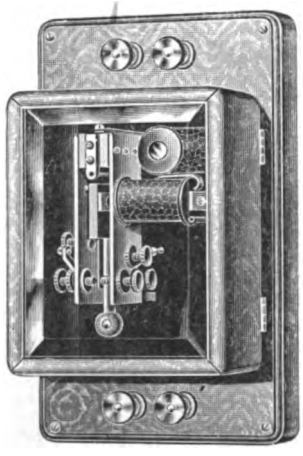

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SOUND WAVES

An Advocate of Independent Telephony

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CHICAGO, MAY, 1907.

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THE BELL AND THE U. S. I.

The American Telephone and Telegraph Company has withdrawn its proposition to buy the United States Independent Telephone Company and subsidiary properties. Among the constituent companies of the United States Telephone Company are included the Independent operating exchanges at Rochester, Syracuse, Utica, Jamestown, Herkimer, Rome and some few smaller systems in the same territory, all in New York, as well as the plant of the Stromberg-Carlson Telephone Manufacturing Company at Rochester, and a controlling interest in the Home Telephone Company at Salt Lake City.

Thus is brought to halt, temporarily at least, the tempest in a teapot which has been raging ever since a coterie of Rochester capitalists attempted to emulate the high-handed financial methods employed by the Milk street contingent of the Bell Telephone Company.

But there are two sides to every story, and we are prone to believe that many misleading and untruthful statements have been inspired by this fiasco. While no direct accusation has been made, insinuations and innuendos have been circulated, apparently with the intention of aspersing the character and acts of persons ostensibly representing the Independent interests.

Prior to the establishment of the Stromberg-Carlson factory in Rochester, George Eastman, Hiram W. Sibley, Thos. W. Finucane, James S. Watson, Edward Bausch, Walter B. Duffy and others became financially interested in the concern. Knowing the high standing and financial responsibility of the gentlemen concerned, it would seem almost unnecessary to contradict any malicious reports concerning them and their motives. But we trust we may be pardoned in saying that they didn't know the Independent telephone business. From what appears to be the highest authority that has been quoted on the subject, it is stated that these gentlemen were induced to take stock, first in the Stromberg-Carlson plant, and later in the U. S. I., not because of any desire for pecuniary benefit, but rather that civic pride caused them to have established in their home city a business that would be of benefit to the community in general, and especially to the merchants. It is not usual that civic pride is accorded place over pecuniary reward, granting rare instances do exist, yet these gentlemen aided not only in the first enterprise, but afterward became important factors in the organization of the U. S. I. Company.

The United States Independent Telephone Company began its history with the aim to achieve results. Its promoters evidently had in mind that the company would ultimately become the rival of the American Telephone and Telegraph Company. It had willed to accomplish single-handed, what ten thousand companies

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are successfully doing every day; but failed, and the Independent telephone industry became shocked to no small degree.

Finding itself top-heavy with stock and bonds, and long on notes and discounted credits, the situation became one demanding immediate action in order to cope with confronting obligations. An advisory committee, in whose hands the problem of finances rested, was unable to raise the required $6,000,000 wherewith to stem the tide, and negotiations were opened with the Bell Company with a view of "unloading."

This was a new opportunity for the telephone trust, and it met the problem by tendering an agreement which was favorably received by the committee for the U. S. I. The agreement was a virtual option and gave the Bell Company full rights to investigate the affairs of the U. S. I. from cellar to garret. This privilege it accepted with alacrity. Its findings we shall have dealt out to us in piece-meal as long as it maintains a press bureau and has breath to fight. It is the Bell method. Evidences of the advantage thus given the Bell began to show at the first effort of the Independents to block the transfer.

It would hardly be expected that any ordinary committee would endeavor to dispose of a $50,000,000 corporation, in a secret conference, without a protest from the stockholders. As soon as the matter became known, an association was formed for the purpose of protecting the interests of the stockholders, and which included a number of the prominent business men at Rochester, Utica, Salt Lake City and other of the cities involved in the transaction. Through the work of this committee, Attorney-General Jackson, for the state of New York, caused to be served upon the American Telephone and Telegraph Company a summons and complaint. Incident to bringing the action, the attorney-general obtained from Supreme Court Justice Betts an injunction order restraining the transfer of the property. Dates for hearings were fixed, and at these hearings evidence was adduced which showed conclusively that the Bell Company had no other desire than to ruin its alleged rival.

A certain Judge Herrick, while arguing for his client, the Bell Company, at one of the hearings before Attorney-General Jackson, made the statement: "We hope and believe that all the Independent telephone companies will follow this one into bankruptcy. Their organization and operation amounts to practical blackmail." Judge Herrick also admitted that any action of his client would not prevent the starting of other Independent companies in the same community. He admitted that the closing of the Stromberg-Carlson plant would mean only the annual loss of $4,500,000 worth of product, which could be taken care of by the many other Independent manufacturing concerns. In defending the action of his client, Judge Herrick stated that the Bell Telephone Company was not in business for its health, though it had been a little altruistic in this particular instance, and he also concluded that the Bell Company's action in the matter was a "benevolent and charitable enterprise."

President Fish of the Bell Company, in his testimony, said that he had no use whatever for the Rochester manufacturing plant and insisted, from the beginning, that it should not be considered in the merger. He thought that a new company should be formed to take over the plant for the purpose of manufacturing automobiles, and he was emphatic in his assertion that the Western Electric Company, the manufacturing concern for the Bell Company, with plants in Chicago and New York, produced a superior grade of apparatus and would continue to supply his requirements. He denied perfunctorily that there would be immediate consolidation of the two systems in any of the towns involved in the transfer, but frankly declared that it would be the ultimate intention. In the end, he expressed the hope that, the cost of a single telephone to "the average subscriber" would be no greater than a single telephone under a competitive system. The president of the Bell Company veiled very thinly his contempt for the business methods of the U. S. I. and his evidence must have hurt the sensitiveness of the Rochester magnates.

It was the persistence of the stockholders' association, and its method to block the merger, that finally decided the Bell Company to withdraw. At Jamestown, the city council authorized the appointment of a committee "to investigate forthwith and report upon the practicability and desirability of municipal ownership of a telephone system," should legal steps not avail to prevent the consolidation of the companies. The citizens at Syracuse and also at Utica offered to buy the local plants outright, rather than see them go to the Bell Company. The manager of the Utah Independent Telephone Company, who attended the meetings before Attorney-General Jackson, said that if the deal went through he would make a separate fight in his territory, in the Federal court. He declared that it was a fight for life, and rather than see his stock pass into the hands of the Bell he would burn it up. B. G. Hubbell, of Buffalo, realizing that to cut off the several towns named would work a hardship on his city, is credited with having said: "We have the money all ready and our proposition will be submitted to the U. S. I. Company. A consummation of our plans will mean the organization of the most comprehensive Independent telephone system in the country." Another condition, which should not be overlooked, was the large penalties that would have to be paid for violating the Donnelly anti-trust act, but possibly the actuating circumstances which had the most to do with the Bell's final decision to withdraw was its own financial affairs. The company is hard pressed and has sufficient troubles of its own. Even had it been possible to take over the properties of the U. S. I. Company, the consequent litigation would have been expensive and exasperating. Independents are fighters to the last ditch and have demonstrated this to the conclusive satisfaction of the Bell trust.

There are a number of deductions to be drawn from this unfortunate affair. It shows most clearly that the Bell Company is still the hated opponent of the Indepents. It does not hesitate to belittle the Independent enterprise. Nothing could be more contemptible than the remark of Judge Herrick which we have quoted. If the $200,000,000 which Independents have invested in the telephone business is "practical blackmail," there is taint on other than Standard Oil dollars. If President Fish prefers that our manufacturing establishments shall be converted into automobile plants, he seeks to divert us. Better build more telephone factories than to do that.

But inflated securities and watered stock have been worsted. The promoter's "pipe" has gone out and his plans are shattered. We predict that he will never flourish in the Independent telephone business and suggest that he should follow legitimate gold brick operations.

What does it all mean? Shun the Bell; seek the level; build conservatively and honestly.

CHICAGO COMMISSION REPORTS.

A REPORT on the Chicago telephone situation, respecting service, rates, regulation of rates, etc., prepared by a special commission composed of Dugald C. Jackson, Wm. H. Crumb and Geo. W. Wilder, has been submitted to the council committee on gas, oil and electric light of the city of Chicago.

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The appointment of the commission grew out of a desire upon the part of the Chicago city council to be correctly informed regarding the complex problems respecting existing telephone service and the application of the Manufacturers' Telephone Company for a new franchise, which would mean ultimate competition for the Chicago Telephone Company. The report of the commission is of considerable length and, while holding to the council's instruction, treats specifically and exhaustively on four chief topics, viz:

1. The feasibility of the proposed project of the Manufacturers' Telephone Company.
2. The relative merits of flat rate and measured rate telephone service.
3. The application for franchise made by the Chicago Telephone Company.
4. The advisability of requiring universal toll connections by ordinance.

The commission holds that the proposition for a franchise submitted by the Manufacturers' Telephone Company was not feasible. This conclusion was based primarily on the proposed company's flat rate for service and its promise to pay the city 5 per cent of the gross receipts. The rate to be charged for the proposed service was considered inadequate.

There was no paltering on the part of the commission respecting the kind of rate which should obtain in a large metropolis. It is clearly evident that the commission's research on this subject was most thorough and its findings are not only logical, but are pleasing as well. Operating companies having to do with more than one hundred thousand subscribers and the attending evils of maintaining a plant in any large city, must finally depend upon the payment for service on a token basis.

The commission recommended that, were a franchise granted to the Chicago Telephone Company, it should be required to keep a separate record and set of accounting books relating to its business to be accessible to the city consulting engineers at any time. It develops that the Chicago Telephone Company does not know just what its service costs. It was learned, however, that the American Telephone and Telegraph Company received 4½ per cent of the gross receipts of the Chicago Telephone Company—royalties for the use of Bell transmitters and receivers. The charge amounted to $232,246.32 for 1906 and an analysis of the figure shows that it costs the parent Bell Company $108,000 to furnish the apparatus subject to royalty tax. The difference between the first and second sum evidently represents royalty on other fundamental telephone patents.

The advisability of requiring universal toll connections by ordinance was condemned. The average layman should be able to comprehend the extraordinary advantages competing companies would hold over each other were toll connections mandatory. A call originating with one company would, in a measure, be the property of that company, and disregarding any penalty that might be imposed, it would do with it as it pleased.

SOUND WAVES believes that the commission has rendered a valuable service to the telephone industry in general, and that it has meant to be fair to all the interests involved. It was required to perform a certain specified service for the city of Chicago, and in the performance of its labors it was obliged to hold to the subject matter. The criticism, adverse or favorable, has been confined mostly to the daily press. The Chicago *Tribune* saw in the report, objection to the Manufacturers' Telephone Company; a recommendation for new ordinance for the Chicago Telephone Company; a suggestion to abolish the flat rate now existing; and a proposed measure which would provide for municipal ownership in which the city would share in the receipts. The Chicago *Record-Herald* gives the commission credit for having found merits in both proposals for new franchise grants, but claims that the Chicago Telephone Company has been favored. It credits the commission with condemning the Manufacturers' Telephone Company's project, calling it impracticable. The Chicago *Examiner* used the report as entirely eliminating the possibility of telephone competition, while the *Inter-Ocean's* opinion does not differ from the *Tribune* and *Record-Herald*.

The Chicago Daily *News*, referring to the subject of depreciation, which received due consideration, says:

> This means obviously that the telephone company must be allowed to accumulate during its franchise term a sinking fund to reimburse investors in its securities precisely as if the property were to be non-existent at the expiration of the grant. Yet the company at that time actually would have the property to dispose of for whatever it might be worth. So far as the company is concerned, this is much like eating one's cake and having it, too.

Unfortunately, the general public does not know that the telephone business cannot be judged on the same basis with other public service corporations and commodities. It has already been noted that the Chicago Telephone Company does not know, or possibly will not tell, what its service costs. We are inclined to believe that it does not know. Any large operating telephone company is incessantly subjected to unforeseen contingencies that are apt to arise over night. The instrument with which we are familiar today may be out of fashion tomorrow. The whims of the public demand the newest thing as an office or residence ornament. The utility of the older device has nothing to do with the matter.

The telephone business requires money—lots of money—to keep pace with the demands for service. Any system is at best a delicate, sensitive thing, subject to much care and patience on the part of those who have to do with it. After all, it is just possible that the public lacks the patience which might seemingly be due to the operator.

The council commission has endeavored to perform its work impartially. It has had better co-operation from the Bell interests than it could hope to secure from the Independents. The Independents are not operating exclusive exchanges in the greater cities. It is true they have systems in competition with the Bell and that they are rapidly developing wonderful and efficient plants, but they are working on a vastly different basis than was contemplated in the beginning.

That the work of the commission may be considered without bias, let it be understood that telephone competition for Chicago and New York will not in any way be retarded because of it.

INDEPENDENT TELEPHONE DEVELOPMENT.

IT is rather difficult for the most optimistic to realize that $10,000,000 has gone into the Independent telephone business during the past month—but the amount is correct and the figure one conservative—generously so. We make the statement with due consideration as to what constitutes facts.

In this issue of SOUND WAVES is a record of 165 new incorporations formed to promote Independent telephone enterprise is as many different communities. Of this number the amount of capitalization is given in 110 specific cases, and the aggregate total amounts to $2,201,996. You are asked to observe that no estimated allowance is made for the 55 companies whose capital stock is not disclosed. The total has only to do with the 110 whose capital stock is set down.

The record of increased capital stock of 30 existing companies totals $1,628,610. Four other instances of in-

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creased capital is mentioned, but the amount is not stated.

Canada contributes a list of new companies showing aggregate capital of $5,248,000, while Premier Roblin of the province of Manitoba, without considering any of these, says his government will spend $10,000,000 in extending Independent service.

Thus far we have held to figures, but an analysis of the epitome of the month, including such items as we were able to procure during the period from March 16 to April 16, will surely warrant the estimate of an additional million dollars expenditure. It must be borne in mind that no single effort can hope to gather all the record of this development, but we feel perfectly safe in our opinion that few realize what the Independents are doing and how they are doing it. All will agree that Wall street has no charm for this business, and the business has nothing in common to do with Wall street.

In the greater number of cases it requires no incentive other than a need for telephone service to form a telephone company. The promoter is unknown. One of the interesting features of the month's record is the large number of smaller companies. Capital stock ranges all the way from $250 to $125,000 in 110 cases, and the average for all, excluding the largest, amounts to less than $11,000. This money comes from each separate locality without the aid or consent of the Bell Company or its affiliated interests. It is the way of the Independent telephone enterprise and it is the way that makes for continued competition and better telephone service throughout North America.

THE BELL COMPANY'S TROUBLES.

"RETRENCH!" is the cry of the Bell Telephone Company, made necessary because of its maturing short time loans in blocks of $25,000,000 at a clip. Five thousand men have been "laid off" by the Western Electric Company because of "too much prosperity."

Important extensions have been brought to a sudden stop all over the country. At Springfield, Ohio, the cut has been so deep that ten operators were dismissed. When M. I. Berger was in Chicago last month, he advertised for factory help and the response was so great that he received orders from his hotel to desist in blocking the corridors. These were jobless Bell men; and yet the Bell Company claims that the demands made upon it for telephone service can not be supplied.

In Indiana it is proposed that the Independents shall have undisputed rights in the matter of exchange operation, provided satisfactory agreements can be drawn which will give the Bell Company the exclusive long distance business. The Indianapolis convention will probabily put this proposition to sleep May 16. Originally the plan was meant to include Ohio, but we remain as yet in the dark as to its having been accorded any consideration by the Ohio convention. In all probability it didn't conform to the "idea" that has become popular in the Buckeye state.

In Philadelphia the Bell has been obliged to concede a 5-cent toll rate of measured service, which will make a difference in meeting dividends when it is remembered that 98,000 telephones are affected. The concession has aroused the Pittsburgers, who are now making similar demands on the grounds that it is common practice with Independents and that Pittsburg is entitled to as much consideration as the average Philadelphian. In other words, a Pittsburg dime is still worth as much as two Quaker nickels.

In St. Louis a bitter war is being waged by the Bell in its efforts to force the Kinloch Company to adopt a message rate service. Anyone wanting Bell service in St. Louis is privileged to take it on the Bell's terms, namely: 2-party business, $16 per year; measured service, business, 3½ cents per call, guarantee $9 per year. Residence rates: direct line, $6 per year; measured service, $6 per year; measured service, 1.3 cents per message; 2-party line, $3 per year; 2-party, 1 1-5 cents per message, guarantee $9 per year. The Missouri Bell has increased its capital stock $2,000,000, ostensibly for extensions, but it will probably need all this money to make up the deficit which will accrue from this campaign.

As a climax to these trivial matters, we learn that the mayor of Laurel, Miss., was obliged to send a policeman to the central office of the Cumberland Bell Company to wake up the sleeping operators in order to get telephone connection that was regarded as being important.

THE INTERNATIONAL CONVENTION.

THE tenth annual bulletin of the second series issued by the International Independent Telephone Association, dwells at considerable length upon the association's annual convention, to be held in Chicago, at the Auditorium Hotel, June 3, 4, 5 and 6. The bulletin says that this convention will be the "most important gathering of telephone men the world has ever known," and from present indications it would seem that the large attendance of last year will be surpassed.

No better evidence to confirm this statement could be offered than the marvelous progress Independent telephony has made during the past twelve months, and while the opposition of the Bell Telephone Company has been unabated, it appears that even greater results have been achieved in the past six months than ever before in the history of the Independent cause. The constant agitation has convinced the skeptics that there is real telephone competition and that it is necessary. The arrogant Bell trust is today seeking concessions from Independent competitors everywhere, and its manufacturing plants have representatives in the field selling apparatus to the general public. Because of this aspect of affairs, the problems that will come before the International convention should have the serious consideration of the attending delegates. Matters of the greatest importance will come before the several meetings and the subjects will require the best thought and united efforts of representative Independent operators. Every man with an investment identified with this enterprise should be on hand and contribute his part, lending aid and counsel to his fellow Independents.

The association has secured a rate of a fare and a third, on the certificate plan, from the lines of the Western Passenger Association and its affiliated organizations. This will cover the territory west of the Mississippi river, exclusive of the Pacific coast, but including a greater part of Illinois. The Trans-continental Passenger Association will have special summer rates in effect from all Pacific coast points to Chicago, and the eastern and central states offer unlimited round-trip tickets at the flat rate of two cents per mile. The cost of transportation should not be a barrier in limiting the attendance.

While the program has not been announced, it is safe to conclude that it will be of unusual interest. A Dutch smoker has been proposed, to take place in the convention hall, on the evening of June 4. Upon this occasion, a stereopticon lecture, interspersed with vaudeville, will be included. It is also proposed that the annual banquet, a strictly informal affair, will be held at the Auditorium banquet hall, June 5.

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Thriving Illinois System

By M. C. Allen

FROM given data having to do with telephone history is evolved the fact that the Bell Company's exchange in Paris, Illinois, which dates back to a period comparatively recent, is to-day conspicuous only for its total absence. The spirit thus engendered by the Bell octopus, causing it to grow into disfavor and final unstinted condemnation by the subscribers of Paris, being not unlike that which has and continues to breed and establish discontent the country over—explainable in short by an alleged service that was limited, exorbitant rates, and business methods wholly intolerant. The concluding chapter proved none other than the one most natural to follow: with the roused ire of rebellious citizens the instruments of the Bell Company were ordered out, its final departure signal being the removal of its poles and the closing of the exchange. Attendant upon its painful leave-taking were no voiced regrets on the part of the good people of Paris. Boldly took they upon themselves the conduct of the telephone business thenceforth, and to their lasing credit let it be said that, after having met with and mastered the usual hardships of the trial period, they have as a crowning result of their efforts developed a system that *splendid* alone describes.

Home of the Wabash Valley Telephone Company.

Under its present christening the Wabash Valley Telephone Company stands for much of that praiseworthy in minutest detail did time and space afford; but a nutshell derivation of the whole would best describe it as being the most complete and up-to-date telephone exchange ever built in an American city of like size, having in mind, irrespective of cost, the rendering to its patrons of the highest efficiency in service, and at the same time obtaining the greatest economy in operating and maintenance expenses. A reconstruction of the exchange in its entirety, using all new materials throughout, and replacing all old Bell instruments with the latest modern type of Independent manufacture, has made this possible.

The reader's attention is here called to some several accompanying cuts that are in a measure self-descriptive of what constitutes the headquarters, both as to exteroir and interior, of the Wabash Valley Telephone Company.

The new building, located on West Wood street, a brick and stone structure, two and a half story with basement, constructed at a cost exceeding $10,000, is thoroughly equipped throughout with every possible labor-saving device that makes for the most efficient service. Care and caution in construction has rendered it one absolutely fireproof. The interior finish is of dark oak. The floors rest on steel girders and consist of the latest method of fireproofing tile and concrete interwoven with steel rods and netting; the windows being of the latest pattern wire-woven fireproof glass. The main floor consists of a large lobby, opening from which is a public office and the manager's private office; also off the lobby is the stairway leading up to the operating room, operators' rest rooms and bookkeeper's office. The long distance or toll room is also a main floor adjunct. At the rear of the lobby is a door leading to the terminal room, in which all the underground and also the switchboard cables terminate on large angle iron racks made especially for the purpose. Here also are located the wire chief's desk, the large power machines and power board. The basement consists of three large divisions. The front room is given over to the coal bin and the hot water heating plant. The largest, or middle room, is devoted to workshop and instrument stock room. In the rear compartment are located the duplicate sets of large storage batteries which furnish the current for all city telephones; also the operating current that controls the many hundreds of miniature electric lamps used as signals on the exchange and toll boards. The city of Paris points with pride to this building as being one of its modern improvements.

Doubtless to the average visitor the main point of interest centers in the local operating room, where is to be found the large multiple switchboard and chief operator and monitor's desk. A copious supply of light and ventilation is afforded by the many large windows. A cork linoleum, one-half inch in thickness, covers the floor as a foe to clatter of footfalls.

The large switchboard has a capacity of thirty-six hundred lines; at present fully equipped for one hundred farmer lines, twenty toll lines (for night use), and twelve hundred city or common battery lines; positions equipped for twelve operators. Every line on entire board within reach of each operator, thereby obviating the necessity of an assistant operator, as compulsory under the old system.

Desk of chief operator commands a view of the entire switchboard; is fitted with monitor, observing and exchange lines. Close watch can be kept of each operator; connections timed by means of pilot lamps, which glow whenever the exchange is called.

The toll board installed consists at present of two positions. Connected to this are the many lines reaching other cities and towns, by means of which co-operative service can be had over Independent toll lines with many

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Main Switchboard—Capacity Three Thousand Six Hundred Lines.

hundred other exchange points. The company claims a toll service covering in its county alone some four thousand telephone subscribers, with like service to Terre Haute, Indianapolis, St. Louis and intermediate points that is unexcelled.

The terminal room houses the large electric dynamos and charging and ringing machines of the most modern and improved type. The wire chief's desk, terminal racks where all the many hundreds of wires are terminated for testing purposes, the line relays that control the signals of the subscribers' calls, also the most modern lightning and sneak current protection that engineering skill can devise, are likewise here located. On duty as a welcome intermediator for prompt adjustment of difficulties that arise when "receiver off the hook" is at fault, is the ingenious device known as the "howler." For example: A subscriber on the city exchange leaving the receiver off the hook causes the calling signal to remain lighted; connecting the "howler" to the line produces a roaring noise that calls attention to hanging up of receiver in proper place, thus obviating the necessity of sending in call for repair services.

All cables in the central part of the city are laid in conduits underground. Entering the office are nine of these cables, each containing four hundred wires; from these branch out the multiple radiations leading to all parts of the city. Under the old system familiar to every subscriber was what is known as the "crossing of wires," due to conflicting high winds, etc. This aggravation has been practically entirely overcome by the erection of cable poles where access may be had to different numbers of these cable wires, thus making unnecessary the stringing of so much wire on the poles, and so far as is practicable insulating all such wires leading from cable poles to subscribers' telephones.

The foregoing résumé gives a fair outline as to the evolution in the Paris telephone exchange, and must needs convince our readers at large what gratifying results unswerving tact, ability and aggressive stick-to-it-iveness are bound to bring about in a given field where patrons are accorded treatment that is just and fair and afforded a service productive of the best. Under Paris exchange ownership are additional exchanges located at Chrisman, Metcalfe, Vermilion, Marshall and West Union; connection being also had with all telephone exchanges in the western part of the county. All rural lines being improved as fast as conditions will permit.

Constituting the present official heads of the Wabash Valley Telephone Company are George W. Fair, president; C. Marquard Foster, vice-president; J. E. Parrish, treasurer; August Gehner, assistant treasurer, and Hart F. Farwell, secretary. At the helm, as manager, is Mr. Albert Schuler, whose worth and efficiency in the position he occupies, as based upon the marvelous success attained throughout his past telephone business career, bespeaks for the company and its manifold interests a sure and unquestionably rapid growth. A brief summing up of Mr. Schuler's business movements as associated with the conduct of telephone interests, giving as a beginning the year 1895, finds him rendering services in the introductory capacity of digging holes for the Central Union Telephone Company at Lafayette, Indiana; in 1896 promoted from lineman to inspector; in August of 1896 accepted position as special inspector for the Iowa Bell Telephone Company, following which he received appointment as foreman of company work at Clinton, Iowa; from thence the proffered position as manager removed him to Fort Dodge, Iowa; thence to Des Moines and Sioux City, Iowa, as foreman for the Iowa Bell. In May, 1899, he accepted position as chief electrician for the Mutual Telephone Company at Des

Manager's Office.

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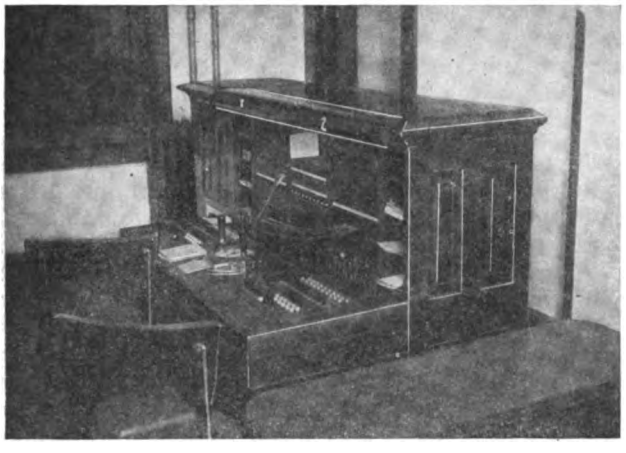
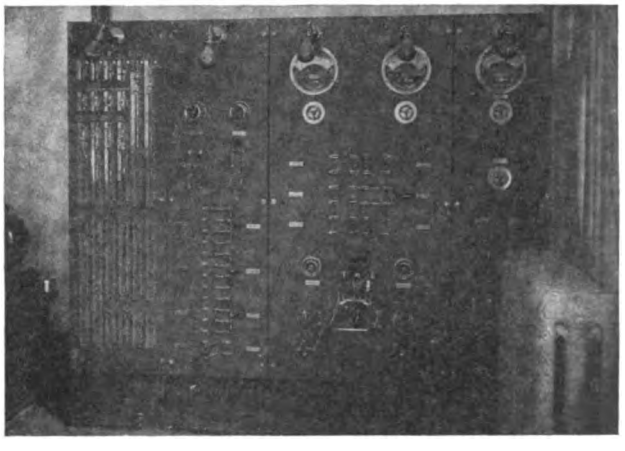
Moines, and about a year later took charge of the cable work for the same company. In April, 1901, he left Des Moines and accepted position with the Streator Independent Telephone Company at Streator, Illinois, as manager. Incident to this last appointment the Streator *Press* of May 16, 1905, issue, alluding to some considerable extent to "The late transfer of the property and franchise of the Streator Independent Telephone Company to the recently organized Streator Independent Telephone and Telegraph Company," paid Mr. Schuler the following well deserved tribute:



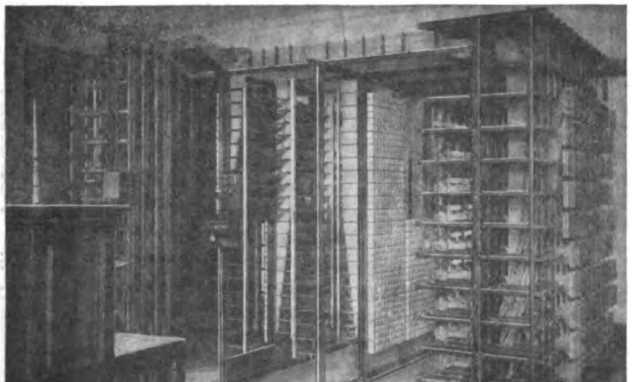
Toll Board.



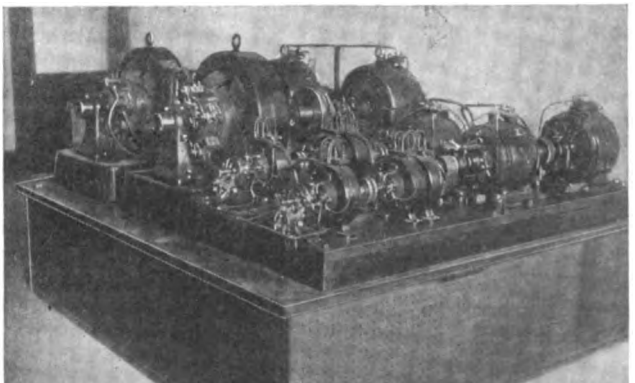
Power Board.

"Manager Schuler will remain with the new company, which will be pleasing news to the citizens of Streator, who have found him at all times pleasant and accommodating. As to his ability and push, what more need be said than that to him belongs the larger share of the credit for the present condition of the plant and business of what is now known as the Streator Independent Telephone and Telegraph Company."

A like meritorious tribute appeared in the same paper under issue of October 18, 1905, which credits Mr. Schuler's wonderful success with the following:



Terminal and Relay Rack.



Power Machines.

"The Wabash Valley Company may consider itself fortunate in securing the services of such a man as Mr. Schuler. He possesses in a large degree the enthusiasm necessary for success in any walk of life, and, although yet a comparatively young man, has a wide experience in the telephone business.

On September 1, 1901, when he assumed the management of the local exchange, there were only four hundred subscribers. Now there are sixteen hundred and fifty. This immense increase in business was due largely to the efforts of Mr. Schuler, and it is the strongest sort of testimony as to his worth and efficiency."

With a goodly corps of such able managers at the respective heads of the already and those to be established exchanges of the growing Independent system the future welfare of both exchange and subscriber would be an insured certainty.

Much additional in detail could be gone into as having to do with this particular branch of the Independent telephone system that during the past five years has made strides most marvelous, despite the many odds to be surmounted, against its sworn foe the Bell. That its present steady and healthy growth the country over gives proof of its becoming the telephone "Gibraltar" of the not far distant future goes without saying, as few are the cities, towns, villages, hamlets and even farm houses that are not connected with the great Independent system. The sounding keynote that insures to any given undertaking a progressive present and an undeniable future finds substantial heralding in success alone. The enterprising American public of today, be its representatives of the unpretentious rural or of affiliations cosmopolitan, are not in quest of ways and means whereby to have extorted from them the bulk of their financial holdings by doing tribute at the shrine of some illegal monster, but are rather bent on eliciting returns on a basis equally remunerative with the investment made, and with all due respect to what may or may not constitute the pressing needs or untoward demands of the Bell octopus, the "value received" principle stands for much with the av-

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erage telephone subscriber. As tested the doomed Sir Walter Raleigh the headsman's ax, pronouncing it "a sure cure for all diseases," a like decapitation of a present day multi-headed evil would doubtless be considered by countless thousands the riddance of a decidedly obnoxious usurpant. Should it in this wise be true that history repeats itself, then the oppressed at large have much to hope and live for as future patrons of a given telephone system. A public pest does not always confine itself to a given territory, like some obnoxious weed, but like a parasite-breeding germ infects with view to contaminating the whole wherever its bloodthirsty fangs can well lay hold. At the present status of affairs in telephone history, the scribe feels, patrons the field over and their supporting constituency are confronted with the speedy solving of a paramount issue that can well furnish food for thought, and questions vaguely—rests the final outcome of it all with national, state, county, city or farm legislation, or behooves it those concerned to bring about the desired results by entering a pugilistic encounter in a hand-to-hand combat?

Wire Chief's Desk.

Telephone Service in France.

General telephonic communication is a government monopoly in France, says Consul Skinner, at Marseilles, in a report to the department of commerce and labor. In the large cities telephones are not rented at so much per year, as in America, but are obtained by application for connection and service, for which a fixed rental is paid, after which the subscriber pays the state for the wire used in making the connection and finally purchases the instrument itself. The instrument cannot, however, be adapted to the public service unless it is of a type approved by the state and bears the government stamp. Manufacturers who desire to engage in this business must submit their types to the director de l'exploitation telephonique et telegraphique at Paris for inspection, and if they are found acceptable, each instrument is marked. This mark is good for only one year, and if the instrument is not sold in that period the dealer must send it back to Paris to be re-marked, and runs the risk of its rejection. Retail dealers keep only one or two types of instruments on hand, and practically every sale means a special order on the manufacturer. Mr. Skinner says that foreign manufacturers could hardly hope to build up a very large trade without a first-class general agent at Paris to push the business and take charge of official matters in connection therewith.

In Marseilles the annual cost of telephonic communication is $38.60. In Paris the cost is $77.20 annually, and this system prevails in all the cities of more than eighty thousand inhabitants. In cities of less than that population the government puts in the telephone and erects the wire and charges a fee for each communication plus $19.30 the first year, $15.34 the second year, $11.58 the third year and $7.72 the fourth and each succeeding year. In Marseilles there are about five thousand telephones in use, and the number increases by about 4,300 annually. Each year the government receives bids from private companies for its supply of instruments. At present the magneto type is used, but the introduction of the common battery is expected soon. The automatic type is unknown. The use of instruments instead of electric bells is very unusual in France outside of hotels and workshops. The average price paid for telephones for general communication is $23.16.

Italy Is Not Quite Up to Date.

In reporting on telephone systems in Italy, Consul Dunning, at Milan, says that aside from the government telephone line, which is used largely for connecting private systems in order to give a general service throughout Italy, the service in upper Italy is dominated by the Societa Telefonica per L'Alta Italia, with offices in Milan. This society controls eight companies with a total of 2,235 telephones, connecting with the national and Swiss government lines in order to form a complete system. They have about sixteen thousand instruments in operation. The lines are under direct government supervision, their regulations being subject to the review of the minister of posts and telephones, as are their rates. Automatic telephony has as yet made little progress in Italy. The service is not so rapid as in the United States, some delay being due to the system of "urgent messages" given precedence on payment of triple rate. The instruments are made in Antwerp and Berlin, of magneto type, central being called by turning a crank. Neither the common battery nor the automatic system has been adopted. Rates in Milan are $40 a year for every instrument within a radius of two miles of the Milan exchange, and $1.15 additional annually for every one-eighth of a mile beyond the minimum limit. The government is allowed a discount of fifty per cent. Professional men, pharmacists and others of that class are allowed a special rate of about $31.50 annually for each instrument used, with a ten per cent discount for three or more telephones used by one person. In Milan nearly all wires are run in underground conduits.

The Telephone in England.

John Ardron, assistant secretary of the British postoffice, in charge of telephones, foreign telegraphs and wireless telegraphs, in a recent interview gave some interesting information regarding the telephone development of London and Great Britain.

Briefly, the history of telephony in Great Britain is as follows: In 1880, by decision of the courts, the telephone was considered a telegraph and therefore came within the telegraph monopoly of the British postoffice. At first operating licenses were granted to thirteen private companies, but one of these companies, the National Telephone Company, soon absorbed the others.

Arkansas Convention, May 20.

The Pan Long Distance Telephone Company of Fort Smith, Arkansas, is issuing a souvenir post card showing a view of Electric Park, one of the city's pleasing attractions, in an effort to boost the Arkansas Independent Telephone Association's convention, to be held there May 20th.

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Troubles on Common Battery Exchanges

By Arthur Bessey Smith

IN times past, when the common battery business was new, it was restricted to cities and the largest towns. But as its advantages have become more and more apparent, the smaller exchanges have been waking up, and are installing up-to-date common battery plants. Naturally, the practical telephone men who have obtained all their experience in magneto work, sometimes feel a little at sea when they first come into contact with the new system. It seemed relatively easy to make simple tests on the old telephone instruments, for each had its own complete power plant, neatly housed in the box. The trouble man had all the necessary facilities at hand for testing its operation. Short circuiting the line binding posts of a series telephone and turning the crank would test its ringing circuit very well. A piece of wire applied to the right points would soon enable him to locate an open. In a similar manner the talking circuit could be tested out, even if the telephone were disconnected from the line, for all the talking energy was carried in the instrument itself. But when he comes up to the new telephone, he finds neither generator nor battery —all his sources of power are gone. But I intend to show that hunting trouble on common battery systems is not as hard as it may seem to some, and that in reality the troubleman *does* have the power necessary for his rough and ready testing, if he knows how to use it and how to interpret the results.

Any man who hopes to be anything in the telephone industry must be prepared to get down to business and use his head. It is not necessary for the troubleman to be an expert in higher mathematics or advanced electricity. But a little steady, quiet thinking will often save a man needless labor and waste of time—the latter being especially annoying to both superintendent and subscriber. The simpler fundamentals he should know thoroughly. All the principles of magneto or local battery telephony hold true in common battery work, although they may appear in slightly different form. Any man who is good on the one system need have no fear of the other, if he will apply himself to it.

It is a general rule to observe in all inspection work that details should be carefully watched. Do not take things for granted as all right, for there is where a person often falls down. Satisfy yourself that each part is correct before you pass it.

The condition of the wires on a common battery subscribers' line differs from that of a magneto line by having a voltage across them. This comes from the battery at central, being connected to the line through some form of signalling apparatus. Any short circuit or path of suitable resistance placed across the line will cause the signal at central to be displayed. This makes it necessary for the subscriber's set to be normally open to battery or direct current, so that there may be no loss of current or display of signal when not wanted. In order to allow the operator to ring the subscriber, this open circuit is in the form of a condenser, which will allow the passage of the alternating current for ringing while being impervious to battery current.

The simplest form of common battery instrument is the hand receiver, and we will accordingly give it our first attention, discussing its advantages and troubles when used in this particular way. It is much used by linemen, cablemen and trouble shooters, forming the most portable test set imaginable. The one piece serves as transmitter, receiver, and means of calling central. Good spring clips should be attached to the free ends of the receiver cords, using a separate cord for each binding post instead of the customary twin cord. When a man wishes to call central for testing purposes, he simply goes across the line with his receiver. This automatically displays the line signal, because it makes a short circuit on the line. It is used in the manner in which the first telephones were used, being placed to the mouth as the transmitter and to the ear as a receiver. As a transmitter it is far from perfect, though with good lungs and distinct speech it will do very well for all around work. There are many men who use nothing else, preferring it to other more bulky test sets. As a receiver it is as good as any other receiver.

Owing to the battery current which is flowing through it we have our first trouble. Receivers when used for this purpose do not last very long, the permanent magnet becoming more or less rapidly demagnetized. This is due to the sudden surging of current through the coils when attached to and removed from the line. This tends to demagnetize the steel magnet, especially if the normal flow of the current is in a direction in the coils which will oppose the residual magnetism. Sometimes a receiver that does not talk up strongly may be made to act better by reversing it on the line. This

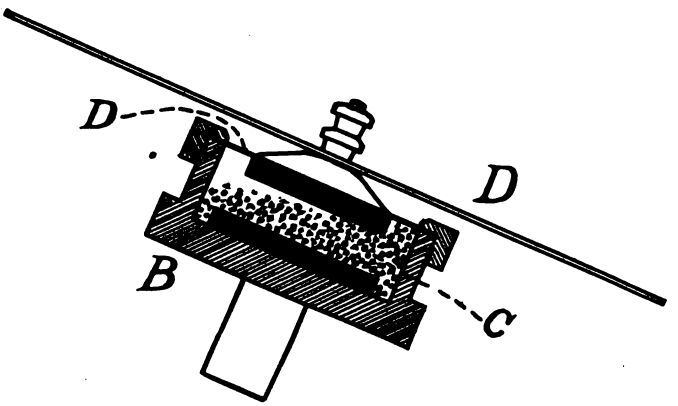

Figure 1.

causes the current to flow in a direction that will assist the permanent magnet and in part make up for its weakness. This is a kink that is worth remembering, as it is annoying to a wire chief to be obliged to strain to hear, and to the trouble man to have to shout to be heard.

A better test set is found in the receiver and transmitter placed in series. Here the rather weak transmitting power of the receiver is replaced by a modern transmitter, so that an ordinary tone of voice can be heard very easily. This avoids undue fatigue and the likelihood of errors in transmitting numbers. Again the receiver may come in for its share of troubles, owing to the chance of wrong polarity of current which flows through it. But the evil is lessened by the resistance of the transmitter, which reduces the strength of the current. Also, the receiver will act fairly well as a receiver, even if its magnet is quite weak, while under similar circumstances it would be of no use as a transmitter. In other words, the power of a receiver as a transmitter falls off much more rapidly with decreasing magnet strength than does its power as a receiver. To make a good transmitter, a receiver must be in prime condition.

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For use as a test set the transmitter and receiver are fastened together on one handle, so that each part is in the proper relation for use. A lever or button in the handle closes the circuit when desired, though in some sets this is omitted. In this case the circuit is permanently closed, reliance being placed on the test clips for controlling the current.

In using this test set trouble will be encountered if the front plate of the transmitter is not held vertical, or nearly so. The reason lies in the construction of the transmitter, which requires that the granulated carbon shall make reliable contact with both electrodes. If tilted

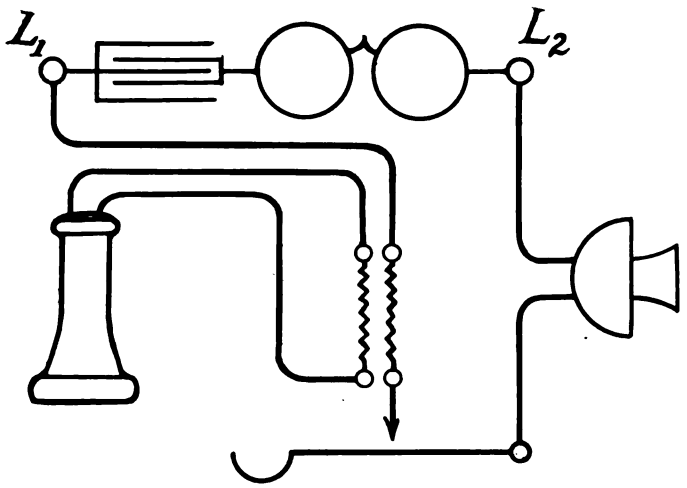

Figure 2.

partly or entirely on its back or face, one of the electrodes will not get enough pressure from the carbon particles to conduct the current, so that talk will be weak or impossible. This condition of affairs is illustrated in Figure 1, which shows only enough of the transmitter to bring out the point. D is the main diaphragm, D^1 the mica diaphragm, B the brass cup, and C the granulated carbon. The front and back electrodes are shaded black. It will be noted that the carbon granules touch only a small portion of the front electrode. It requires only a small vibration from the diaphragm to flatten the pile out so that little or no contact is made, in which case no satisfaction can be had in its use.

A telephone manufacturing company once put out a very good wall telephone of the compact type. The transmitter was mounted on a pony arm which could be turned up till the transmitter would touch the door on which the arm was mounted. In this position the front plate was very nearly horizontal. If a tall person used the telephone, he was almost sure to turn the transmitter up as high as he could get it. The poor quality of the talk may well be imagined, and the instrument got many a curse for which it was not justly to blame.

Of all the types of common battery telephones with which the trouble man will have to deal, perhaps the simplest is that shown in Figure 2. It is in use by many Independent companies and has the advantage of simplicity. The ringing circuit consists of a 1,000 ohm. polarized bell in series with a condenser of two microfarads capacity. The talking circuit contains the transmitter in series with one winding of an induction coil. The contact of the hook also comes in this circuit. The receiver is in a local circuit with the other winding of the induction coil. It is usual not to put any lightning arrester on common battery telephones, so the troubles on the instrument are simplified to some extent.

The normal action is as follows: When the receiver is on the hook the telephone is an open circuit as far as the battery at central is concerned. The break at the hook and the nature of the condenser take care of this. When the receiver is removed from the hook the circuit is closed and battery will flow from the line at L^1 through the induction coil, hook contact, and transmitter back to the line at L^2. The first rush of current on closing the hook will induce a current in the receiver circuit, resulting in the well known click. After that all is quiet, that is, if the line is quiet and the subscriber does not talk. If the transmitter be set into vibration its changes in resistance will cause the current to undulate. These undulations will generate an alternating current in the receiver circuit, reproducing the sound.

Now for troubles. It is clear that any trouble in the receiver circuit cannot affect the talking of the instrument. The receiver may be open or short circuited, or the secondary winding of the induction coil may be open or short circuited, without in either case interfering with the ability to transmit speech. The talking power of this telephone depends on the variation of resistance in the transmitter and its effect on the current which flows through it. As long as the fault in the instrument does not cut off the current from this path, it will talk, even though it may not receive. The primary winding of the induction coil may be short circuited with the same effect. Any of these troubles will, however, prevent hearing, or at least impair it. Sometimes a coil has been known to get damp, in which case the hearing was weak, though not entirely cut off. But talking was as good as ever. The remedy is the complete drying out of the coil.

This is a valuable point in this type, as it makes it possible to report troubles after the instrument is otherwise totally disabled. Wire chiefs have often gained a pretty clear idea of the nature of the trouble from the report of the chief operator or the subscriber's operator. She may say that she could hear the subscriber, but could not make him give his number. If this report is authentic, it points to such a condition as above given.

Any break in the transmitter circuit will put both talking and hearing out of business. This is evident

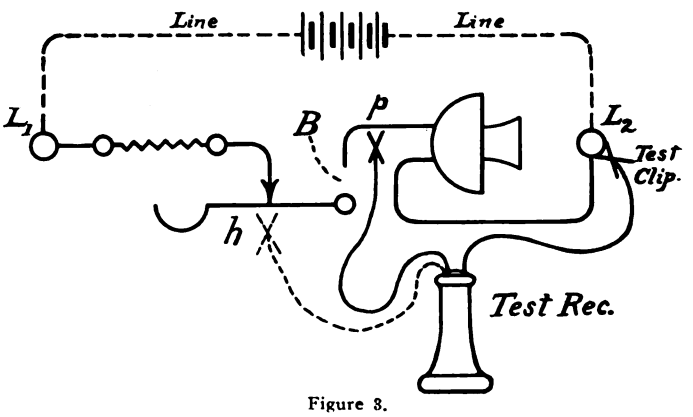

Figure 3.

when we consider that over the same wires through the telephone come the direct current to feed the transmitter and the alternating current from the other telephone where a man may be talking to us. These open circuits are in most cases not hard to find, especially if they are permanent. If a trouble will stay in long enough for you to test thoroughly, you can find it every time. Suppose that the trouble is in the hook, which does not make contact, or that there is a broken soldered joint at the hook. If your inspection does not show you where the trouble is, try to get central by taking the receiver off the hook in the usual manner. Failing to get the operator, get

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out your test receiver and go across the line binding posts. If the line is all right, you will get battery and can test with the operator the action of the line signal.

After being assured that the trouble is not at central proceed to short circuit parts of the primary circuit. Use your test receiver for this purpose. Leave the receiver of the subscriber's set off the hook. As there is an open this will not cause current to flow. Suppose that you start at L^2, by fastening one of your test receiver clips in it. Then touch the other clip to various points in the transmitter circuit, listening for the click in the test receiver. As long as the point at which you touch is between L^2 and the break, you will get no click, but if you get beyond it you will know it by getting battery. This is made clearer by reference to Figure 3. In this the talking circuit is laid out in a straight line to make the conditions clearer. The break is supposed to be at *B*. The dotted lines represent the battery at central. If the free end of the test receiver's cord be touched at *p*, you will not get battery, for the receiver and transmitter are in shunt with each other, and still in series with the break. But if you touch at *h*, which is beyond the break, you will get battery. While this is seemingly a very simple test, it is surprising how many men are unable to apply it in its many uses. This is only one of the many places where this plan may be used to advantage.

The same work may be done without the use of the test receiver. Put the receiver of the set to your ear, and with a piece of wire attached to L^2 touch all the points in the transmitter circuit from L^2 to the terminal of the induction coil, which is next the hook. When you get past the break you will get battery in your ear. If the break should happen to be between the coil and L^1, you must attach the wire to L^1 instead of L^2, and touch all exposed points as before. This will catch all breaks except one in the inside of the coil. Having tested all other points and not found the trouble, you would naturally suspect the coil. To make sure of it, a good way is to take the receiver off its binding posts and connect it in series with the line and L^1. With the wire attached to L^1, touch all exposed points as before, and when you have passed the bad place, you will know it.

The Law and the Telephone

By George H. Murdoch, Jr.

CONTRACT FOR RIGHT OF WAY.—The grant to a telephone company of the right to construct and maintain a line "over and along" a 3,100 acre tract, " including necessary poles along the roads adjoining the tract," construed, and held to limit the grantee's rights to the construction and maintenance of a line along the highways which extended through the tract, and not across the land.—Morrison v. American Telephone & Telegraph Company, 101 N. Y. S. 140.

TELEPHONE COMMUNICATIONS IN EVIDENCE.—In an action by a wife for alienation of affection, evidence by plaintiff's son relative to a telephone conversation between the plaintiff and defendant which he claimed to have overheard was not admissible; it appearing that the witness had never seen defendant or heard her speak, except by telephone on the morning of the same day.—Dunham v. McMichael, 63 A. (Pa.) 1007.

FAILURE TO GIVE SERVICE.—Dr. Hicks, a practicing physician, in the city of Vicksburg, and a subscriber to the telephone service of the Cumberland Telephone & Telegraph Company, always paid his bills monthly when presented. He sued the company, alleging that he had been called by an employe of the telephone company to attend an injured lineman and that this employe assured him that the company would pay the bill; that the doctor's bill was not paid, and when his bill for telephone service was presented he instructed the collector to have the amount thereof deducted from his bill for professional services to the lineman, and that the collector said he would deliver his message to the manager; that he had no other notice or warning until his telephone service was suspended. He brought suit for $1,800, for punitive damages and for actual damages caused by loss of practice while his telephone was cut off, which he estimated to be between $200 and $500. To prove his loss of practice he was permitted to testify that certain persons (naming a number of them) had afterward told him that they had tried to reach him over the telephone to secure his professional services, but found that his line had been cut off.

He recovered judgment in the trial court, but this has been reversed and remanded by the Supreme Court of Mississippi on the ground simply that certain evidence introduced to show the amount of damages was hearsay. 42 So. 285.

MISTAKE IN ORDER.—Decedent, while repairing defendant's electric wires, telephoned to the power house to shut off the power. He had difficulty in talking with the power house, and his message was repeated by a telephone operator, who testified that she said, "Shut off the power after ten minutes." The man in charge of the power house understood the message to be shut off the power "for ten minutes." He shut off the power for fifteen minutes, then turned it on, and decedent, who was then repairing the wires, received injuries causing his death. Held that, there being a misunderstanding as to the message for which defendant was not responsible, and which might have happened had there been a rule as to turning on the power, it was not liable.—Van Alstine v. Standard Light, Heat & Power Company of Unadilla, 101 N. Y. S. 696.

WRONGFULLY CUTTING OUT SUBSCRIBER'S TELEPHONE.—J. H. Hobart sued the Cumberland Telegraph and Telephone Company for the sum of $2,000 for damages for wrongfully cutting out his telephone. The facts in the case are as follows: Mr. Hobart resided about a mile and a half from Vicksburg, on what is known as the "Warrenton road." He had entered into a contract for a telephone to be put into his residence some years previous to the date at which this suit was brought, and subsequently, his wife having a store, he saw the manager of the telephone company and asked him to place a telephone in this store, which the company did. At the time they went out to place the telephone in the storehouse of his wife, Mr. Hobart himself was not present, and the telephone company presenting a contract to be

signed, the clerk in the store signed it in the name of Mrs. Hobart, so that the telephone company had a contract with Mr. Hobart for the telephone in his residence, and a contract with Mrs. Hobart, signed for her by the clerk, for the telephone in the store. It is stated in the testimony that the telephone company believed that the contract was signed by Mr. Hobart, he having spoken to them about it, and that the charge for rent of the telephone in the store was placed on the books to Mr. Hobart, though the written contract was in the name of his wife, so far as the store was concerned. About a month or such matter after the telephone had been placed in the store, Mrs. Hobart sold the store, and Mr. Hobart states that when the store was sold he notified the telephone company to take out the telephone in the store. Some time in July, 1905, Mr. Hobart was away from home four or five days on his plantation in Louisiana, and returning about the 15th or 16th, he found his telephone cut out. He rang up the office, and asked them what was the matter, and they told him he was cut out, and the party that answered the telephone said "they knew all about him, and that his telephone would not be put back on the line." Mr. Hobart had not paid his rental for the month of June, and on the 15th or 16th of July he was cut out. It also seems that there was some $3.10 due on the contract of Mrs. Hobart for the telephone in the store. The next morning Mr. Hobart went into Vicksburg and into the manager's office of the telephone company, tendered his rental for the month of June, and asked to be put back on the line. This the manager declined to do because they said he owed them $3.10 on the store telephone. Mr. Hobart told them that he did not owe for the telephone in the store; that it was his wife's contract, the store belonged to her, and if she owed anything to present her the bill. He tendered to them the $2 for the rental for the month of June due by himself on his residence telephone, and $2 in advance for the next month, and requested reinstatement of the service, but they declined to accept it because he would not pay the full amount as they claimed; that is to say, both under his wife's contract and his own, so that when they declined to reinstate his telephone they had full knowledge that the $3.10 was the debt of Mrs. Hobart. They sent out a lineman and cut out the telephone and removed it from Mr. Hobart's residence. Mr. Hobart says that when they came to remove the telephone he tendered them $6, paying in advance for the residence telephone, which they declined to accept. He was without a telephone for three or four months under these circumstances. Mr. Hobart claims to have been damaged in many ways by the removal of the telephone, but that it is difficult to enumerate the exact amount and the ways in which he was damaged. That he lived out in the country, and that it was an almost indispensable adjunct to his household, and yet difficult to enumerate in dollars and cents; that when he was in town and wanted anything he could telephone. When he wanted to send things home he was in the habit of putting them on the car and telephoning some one at the house to meet the car and get the things; that after the telephone was cut out he could not do this, but had to send a boy; that he suffered inconvenience and annoyance in ways too numerous to name and too difficult to put in dollars and cents, and that the telephone was a necessity to him. He used the telephone on his place in Louisiana, and he used it as a matter of convenience to talk home. While he was without the telephone he was taken sick, and suffered great annoyance and inconvenience in not having a telephone in his house; that, to his recollection, he spent $25 to $30 for messengers to send things home; that when he had long distance calls several times he would have to go out at night to his neighbor's house to talk, and when his family was sick he was put to much inconvenience and deprived of the protection which the telephone gave him at his house. The case was submitted to the jury on these facts and they awarded damage in the sum of $150. The record clearly shows that there were two distinct contracts, one by Mr. Hobart for the telephone in his dwelling, and another contract in the name of Mrs. Hobart for the telephone in her store.

The Supreme Court of Mississippi in affirming a judgment for plaintiff rendered in the trial court, said in part:

"It is attempted to be shown that the telephone company thought they were making the contract at the store with Mr. Hobart, instead of Mrs. Hobart, but that can make no difference in the decision of this case for the reason that the contracts were separate contracts relating to different properties, and again they were informed that it was Mrs. Hobart's contract after they had cut out the residence, and again the personnel of the party contracted with could make no difference for the reason that they were bound to put in the telephone in the store at the request of either Mr. or Mrs. Hobart. These contracts were separate and independent contracts, having no relation with each other, and because of the failure to pay charges on one of the telephones the telephone company had no right to cut out the other. In the first place, they were contracts between different parties; in the next place, if this were not true, they were separate contracts about different properties, and the telephone company could only cut out that telephone for which there had been a default in payment. At the time that Mr. Hobart's telephone was cut out he was in default on his residence, and the telephone company had the right to cut him out after due notice to him, but when he tendered the money properly due on the telephone in his dwelling they had no right to undertake to coerce payment of the amount due on the other telephone by refusing to reinstate the service in his house. In the first place, he did not owe it; it was his wife's debt. And in the next place, if he had owed it, it was a separate contract, and they could only put an end to the particular contract wherein there was default. In the case of Burke v. City of Water Valley (Miss.) 40 So. 821, Whitfield, C. J., says: 'If gas is supplied to the owner of different houses under separate contracts, failure to pay the gas bill on one house does not authorize the cutting off of the gas from the other.' Gaslight Company v. Colliday, 25 Md. 1; Lloyd v. Washington Gaslight Company, 1 Mackey (D. C.) 331. Gas companies and telephone companies, being public service corporations, are controlled by the same principles of law. It is shown by the testimony that the telephone company was fully notified that the amount of $3.10 was the amount due on Mrs. Hobart's telephone and for which she was liable, yet, notwithstanding this, they cut out the telephone in the dwelling anyway, which was unwarranted. A telephone company may cut out a subscriber for nonpayment of dues on reasonable notice, when the dues are not actually paid, but when they are paid, or when they are offered to be paid, they act at their risk in refusing reinstatement of service when requested so to do.

The only other question necessary for us to consider is the question of the amount of damage. The jury in this case allowed the sum of $150, and we cannot say that their judgment was wrong in this matter. The law of damages, and what is proper to be allowed must largely

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depend upon the nature of the suit in which damage is sought to be recovered. It was impossible for Mr. Hobart to itemize each separate item of damage occasioned him by the removal of his telephone. The difficulty in doing this is manifest to every one. The telephone has come to be a necessity. It is the thing which completes the use of a home. It is resorted to daily and hourly to such an extent as to be regarded as indispensable, yet when it comes to taking pencil and paper and calculating day by day what pecuniary value it possesses, it is almost impossible. The inconvenience, the annoyance and the trouble of being without one is a damage which no one can accurately estimate. It is such inconvenience and annoyance as is only to be fully appreciated when one is deprived of its use; its loss is a great and distinct damage, yet such damage as is not susceptible of exact measurement. When the telephone company undertook to cut out the residence telephone because of the nonpayment of rent, Mr. Hobart was in default, and they had the right to do it. When they declined to reinstate it after having been offered the rental of the telephone in the dwelling house, it was their duty to reinstate it, and not having done so, they should compensate Mr. Hobart for his pecuniary loss and such inconvenience and annoyance in being wrongfully deprived of its use, as the jury thought proper under the facts. We do not say that damage for inconvenience and annoyance may be recovered in all cases, but from the very nature of the subject-matter of this litigation, annoyance and inconvenience is one of the main elements of damages. When the telephone company undertake to cut out their subscribers for debts which they claim to be due them, they may do so if the subscriber actually owes them, but if the subscriber is not indebted to them they are liable in damage to the subscriber for such actual damage, inconvenience and annoyance as is occasioned him by wrongfully cutting out his telephone.

The damage sustained by the loss of a telephone in its very nature is largely composed of inconvenience and annoyance. That a person deprived of the use of a telephone is materially damaged all will concede. What is the amount of damage in dollars and cents cannot be accurately stated by the party suing, for the reason that his damage consists not only in pecuniary losses, but it consists in inconvenience, discomfort and annoyance, and it must be left to the jury to determine what is the damage sustained, taking into consideration the discomfort, the annoyance and inconvenience suffered, together with actual pecuniary losses. Would it be contended if one's gas is wrongfully cut off that compensatory damage would be only what it would cost to buy tallow candles? To so hold, and to hold that annoyance, discomfort and inconvenience was not a proper element of damage to be considered by a jury when the service of a telephone has been wrongfully discontinued, would be to place the public at the mercy of the telephone company and force them to yield to many unjust demands rather than contest, for fear of a discontinuance of the service. Such coercive powers cannot be sanctioned.

We would unhesitatingly set aside a verdict of the jury where the amount allowed was grossly excessive or unreasonable, but we shall be slow to interfere with their judgment when it is not so. The telephone may be considered a necessary household utility, so much so that the thought of losing it will coerce almost any one into payment of any debt claimed within reason rather than have it cut out. It is a public service corporation without competition, monopolistic in nature, and the patrons have no choice but to accept its service, and they have not the privilege of selecting to do business with a competitor, because there is no competitor, and for this reason the rights of the public should be carefully guarded against oppressive methods used for the purpose of collecting unjust demands. The necessities of the law must meet modern conditions.

The action of the telephone company was wrong, and it was not necessary for Mr. Hobart to pay the wrongfully demanded bill for the purpose of retaining the telephone in his dwelling. If he had done this it would have been necessary for him to sue for the recovery of the amount overpaid, and to require him to do this would be a violation of the fundamental juristic principle of procedure. That principle is that the claimant, not the defendant, shall resort to judicial process. This case is in perfect accord with the case of Cumberland Telephone Company v. Baker (Miss.) 37 So. 1012. In that case the telephone company had rendered the service, and the rental was properly due from Mr. Baker, but he claimed an unliquidated amount as damage for poor service, and paid his bill less the amount so claimed by him, whereupon his telephone was discontinued, and the court held that he was not entitled to exemplary damages." 42 So. 349.

Ironton's New Automatic System

By J. W. Lattig and C. L. Goodrum

THE Home Telephone Company has cut over an entirely new automatic telephone system, equipped for four hundred direct lines and one hundred four-party lines, making eight hundred stations in all. This system, at Ironton, Ohio, will undoubtedly attract unusual attention, for it marks the advent of the American Automatic Telephone Company as a manufacturer of an automatic system differing in many ways from the Strowger.

The arrangement of the switches in the switchboard frame of this application is shown in Figures 1 and 2. The switchboard frame, of which there are two sections, is shown in Figure 3 without the encasing cabinet. Figure 4 shows the switchboard frame with its encasing cabinet. The latter is made of highly polished golden oak, with glass.

There is an entrance door at one end of the enclosing cabinet, and the sides are provided with sliding doors, so that the switches and wiring are readily accessible, and are at the same time thoroughly protected against dust. In addition to the dust protection afforded by the cabinet, it should be noted that the construction of the switches and their arrangement in the frame is such that they are self-protected. All contact springs are horizontal, and no contact is exposed to dust settling by gravity.

Figure 5 shows the relay rack, with a polished golden oak glass encasing frame. The wire chief's desk is also shown in this view.

Figure 6 shows the power equipment, which does not differ materially from other equipment designed for similar purposes.

In addition to the alleged advantages of automatic over manual systems, namely, secretiveness, uniformity, celerity, reliability and more economical service, points which are conceded by a great many practical telephone

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people, the Ironton installation lays claim to being the first to have adopted a central energy system of automatic exchanges, and in doing so it has developed along manual lines in methods of operation as closely as possible, wherever it was desirable, thus making the system more readily understandable by manual men and less difficult to educate attendants.

can be used, and party lines may be equipped with lockout attachments of simple design, if desired, making secret service possible on party lines as well as on direct lines.

Automatic pay stations may be provided, if desired, in which coins are automatically taken, or returned, depending only on whether the called party has or has not

D-D-1 143	G-15 142	G-15 141 16T. RINGING	G-15 140 CURRENT	G-15 139	G-16 138	G-16 137 25 RINGING	G-16 136 RINGING CURRENT	G-16 135	G-17 134 3S RING.	G-17 133	G-18 132 4TH.	G-18 131 RING.
D-D-2 130	B-D-15-16-17-18 129	G-14 128 4TH.	G-14 127 RING.	G-12 126	G-12 125 RINGING	G-12 124 CURRENT	G-12 123	B-15-16-17-18 122	B-15-16-17-18 121	B-15-16-17-18 120	B-15-16-17-18 119	B-15-16-17-18 118
D-D-13 117	B-D-11-12-13-14 116	G-13 115 3S RING.	G-13 114	G-11 113 1ST.	G-11 112 RINGING	G-11 111 CURRENT	G-11 110	B-11-12-13-14 109	B-11-12-13-14 108	B-11-12-13-14 107	B-11-12-13-14 106	B-11-12-13-14 105
D-D-14 104	B-D-10 103	G-10 102	G-10 101	G-10 100	G-10 99	G-10 98	G-10 97	B-10 96	B-10 95	B-10 94	B-10 93	B-10 92
D-D-15 91	B-D-9 90	G-9 89	G-9 88	G-9 87	G-9 86	G-9 85	G-9 84	B-9 83	B-9 82	B-9 81	B-9 80	B-9 79
D-D-16 78	B-D-8 77	G-8 76	G-8 75	G-8 74	G-8 73	G-8 72	G-8 71	B-8 70	B-8 69	B-8 68	B-8 67	B-8 66
D-D-17 65	B-D-7 64	G-7 63	G-7 62	G-7 61	G-7 60	G-7 59	G-7 58	B-7 57	B-7 56	B-7 55	B-7 54	B-7 53
D-D-18 52	B-D-6 51	G-6 50	G-6 49	G-6 48	G-6 47	G-6 46	G-6 45	B-6 44	B-6 43	B-6 42	B-6 41	B-6 40
39	B-D-5 38	G-5 37	G-5 36	G-5 35	G-5 34	G-5 33	G-5 32	B-5 31	B-5 30	B-5 29	B-5 28	B-5 27
26	B-D-4 25	G-4 24	G-4 23	G-4 22	G-4 21	G-4 20	G-4 19	B-4 18	B-4 17	B-4 16	B-4 15	B-4 14
13	B-D-3 12	G-3 11	G-3 10	G-3 9	G-3 8	G-3 7	G-3 6	B-3 5	B-3 4	B-3 3	B-3 2	B-3 1

Figure 1.

Ironton has chosen the only automatic system using two wires, thus making no use of the ground for selective purposes and consequently obviating failures from change of earth potential. The two-wire system has also made it possible to develop an exceedingly simple substation selector, there being only one electrical contact, and that with a commutator arrangement similar

answered. If the called party does not answer, the coin is returned to the calling party. The instrument will also discriminate between rates automatically, and will measure the time for both original and fractional periods, compelling the payment of proper amounts, if conversation exceeds a pre-determined period. Under certain circumstances coins will be returned after service

D-15 351	D-15 350	D-15 349	D-15 348	D-16 347	D-16 346	D-16 345	D-16 344	D-17 343	D-17 342	D-18 341	D-18 340	339
D-12 338	D-12 337	D-12 336	D-12 335	D-13 334	D-13 333	DD-12 332	C-5 331	C-4 330	C-3 329	C-2 328	C-1 327	326
D-11 325	D-11 324	D-11 323	D-11 322	D-14 321	D-14 320	DD-11 319	C-10 318	C-9 317	C-8 316	C-7 315	C-6 314	313
D-10 312	D-10 311	D-10 310	D-10 309	D-10 308	D-10 307	DD-10 306	C-15 305	C-14 304	C-13 303	C-12 302	C-11 301	300
D-9 299	D-9 298	D-9 297	D-9 296	D-9 295	D-9 294	DD-9 293	C-20 292	C-19 291	C-18 290	C-17 289	C-16 288	287
D-8 286	D-8 285	D-8 284	D-8 283	D-8 282	D-8 281	DD-8 280	C-25 279	C-24 278	C-23 277	C-22 276	C-21 275	274
D-7 273	D-7 272	D-7 271	D-7 270	D-7 269	D-7 268	DD-7 267	C-30 266	C-29 265	C-28 264	C-27 263	C-26 262	261
D-6 260	D-6 259	D-6 258	D-6 257	D-6 256	D-6 255	DD-6 254	C-35 253	C-34 252	C-33 251	C-32 250	C-31 249	248
D-5 247	D-5 246	D-5 245	D-5 244	D-5 243	D-5 242	DD-5 241	C-40 240	C-39 239	C-38 238	C-37 237	C-36 236	235
D-4 234	D-4 233	D-4 232	D-4 231	D-4 230	D-4 229	DD-4 228	C-45 227	C-44 226	C-43 225	C-42 224	C-41 223	222
D-3 221	D-3 220	D-3 219	D-3 218	D-3 217	D-3 216	DD-3 215	C-50 214	C-49 213	C-48 212	C-47 211	C-46 210	209
D-1 208	D-1 207	D-1 206	x-12 205	x-12 204	x-12 203	x-12 202	x-12 201	x-11 200	x-11 199	x-11 198	x-11 197	x-11 196
D-1 195	D-1 194	D-1 193	x-10 192	x-10 191	x-10 190	x-10 189	x-10 188	x-9 187	x-9 186	x-9 185	x-9 184	x-9 183
D-1 182	D-1 181	D-1 180	x-8 179	x-8 178	x-8 177	x-8 176	x-8 175	x-7 174	x-7 173	x-7 172	x-7 171	x-7 170
D-1 169	D-1 168	D-1 167	x-6 166	x-6 165	x-6 164	x-6 163	x-6 162	x-5 161	x-5 160	x-5 159	x-5 158	x-5 157
D-2 156	D-2 155	D-2 154	x-4 153	x-4 152	x-4 151	x-4 150	x-4 149	x-3 148	x-3 147	x-3 146	x-3 145	x-3 144

Figure 2.

to a dynamo, except, of course, that there is but one segment on the commutator. By this construction it has been possible to eliminate all fine adjustments, which has a tendency to greatly reduce the cost of substation maintenance, to say nothing of the increased reliability.

The Ironton system is provided with Dean harmonic party lines, but any system of selective ringing

has been rendered, for example, where a party is called who has advertised to pay for all incoming calls, or where a subscriber desires to use a pay station to report trouble to the management, in which case the coin is always returned. If more coins are deposited than are required by time of conversation, the balance of such coins are returned to the calling party when the receiver

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is hung up. All coins collected at pay stations are automatically recorded on a meter in the central office, affording a check on collections.

Metered service may be provided, where it is desired to operate a service on a metered basis, arranged to register in the central office every call that has been answered. This is done mechanically and electrically, and is not dependent upon an attendant. Meters can be arranged to register all calls, either outgoing, incoming, or both. Furthermore, the registers may be arranged so that they will not record calls which should not be recorded, such as, for example, a call to the company's management to report a defect in service. They can also be arranged to record at different rates, depending upon the rate determined for the place in which the called party is located; or they may be arranged to record on the basis of elapsed time in the use of telephones.

Figures 7 and 8 represent respectively the switch base and bank base, with operating mechanism, consisting of the motor magnet shown at the right of switch base, release magnet shown at the left, and a

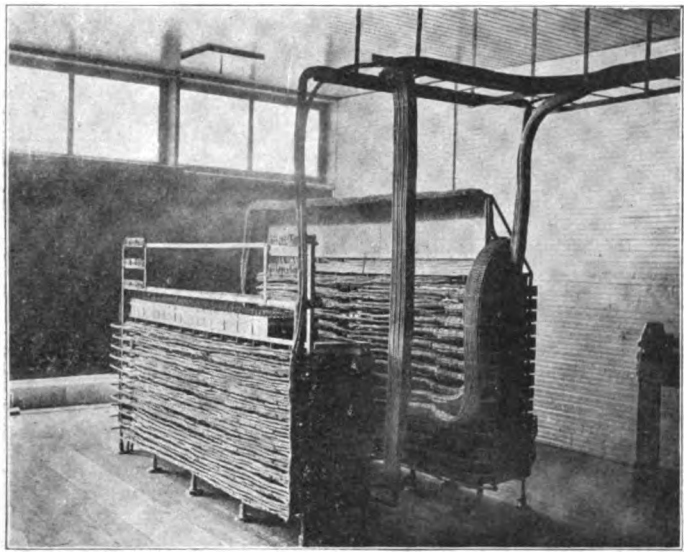

Figure 3.

ratchet wheel carrying brushes for making connection with the bank contacts.

The motor magnet has a spring steel driving pawl attached to the upper extremity of its armature, which engages with the teeth of the ratchet wheel, and serves as the means of moving the wheel forward one step each time the motor magnet is energized. It is possible to drive this wheel forward over its entire course in one-half second, and to stop it with precision while moving at that rate with its brushes resting upon any one of the bank contacts desired.

Just back of the driving pawl there is another spring steel pawl, which also engages with the teeth of the ratchet wheel. This pawl serves, when the switch is in operation, to retain the ratchet wheel in any position to which it may have been advanced by the driving pawl.

To the armature of the release magnet there is attached a steel release spring, the upper end of which normally rests against the left hand end of the driving pawl. This spring is provided with a notch just below the point at which it rests against the driving pawl, the arrangement being such that when the release magnet is energized the release spring is moved forward until the notch passes over the end of the driving pawl; thus, when the release magnet is de-energized, the release spring draws both the driving pawl and the retaining pawl from engagement with the teeth of the ratchet wheel, allowing the latter to return by its spring tension to its zero position. The first following movement of the motor magnet displaces the release spring and permits the driving and retaining pawls to again engage the teeth of the driving wheel.

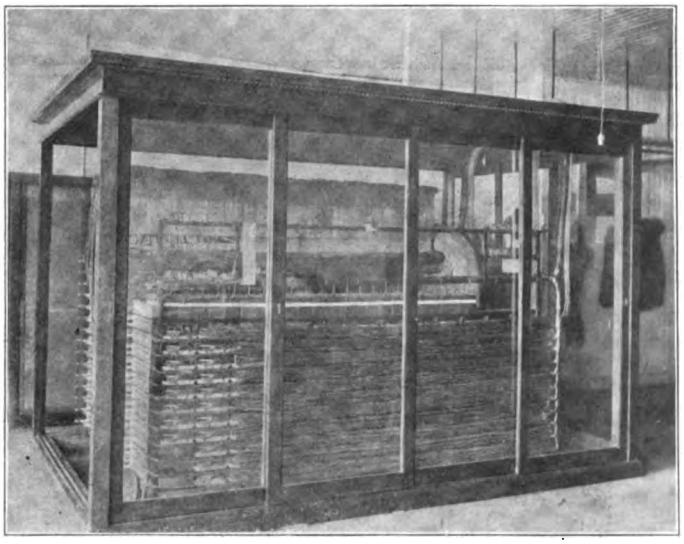

Figure 4.

It will be noticed that there are no cords to become entangled. Current is fed to the brushes by the feeder springs attached to the right hand end of the bridge which supports the shaft of the ratchet wheel. The ends of these feeder springs press upon segments at the lower end of the brushes.

The switches are equipped with male jacks, as shown at the top, and the banks with female jacks, located to coincide with each other. All switches of a certain class are interchangeable, and it is therefore possible to remove and replace one by another in a second or two. The service is in no way disturbed while the change is being made. This feature is important, because it admits of the adjustment of switches at

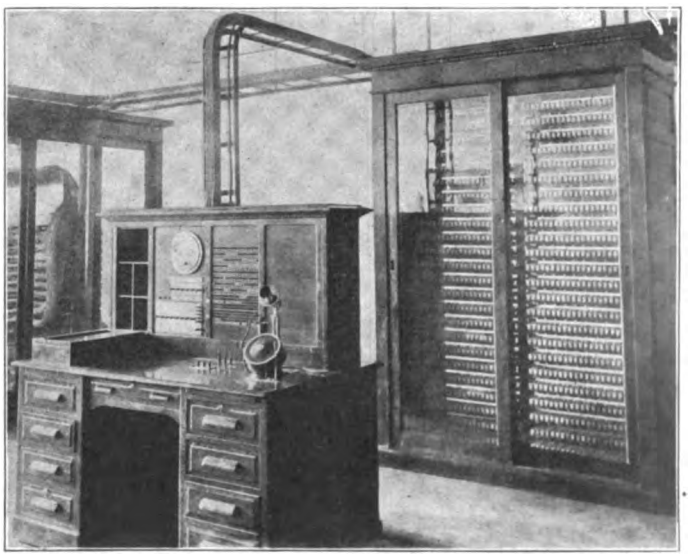

Figure 5.

a convenient testing table, after which they can be placed in the frame with assurance that they are in proper working order. Another interesting feature of the arrangement of the bank and switch bases is the positive alignment when the switch is inserted in the

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bank base. The male portion of the switch is provided with a tongue which is A-shaped at its edges, and the female portion of the bank base is provided with V-shaped grooves into which the A-shaped tongue is inserted, making an absolute alignment between the switch and the bank, both horizontally and vertically.

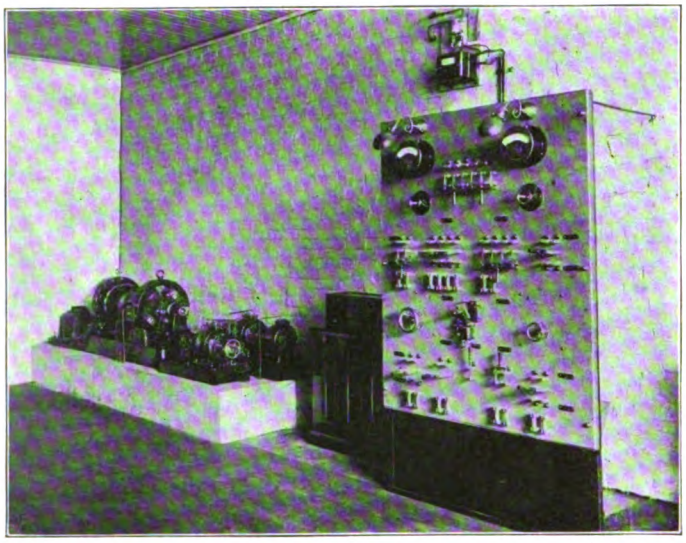

Figure 6.

The bank base is of the 4-point type, two rows of contacts being for line connections and two rows for exchange control purposes. This is the largest bank in use in any exchange. A large per cent of the banks have only three rows, and some only one row of contacts.

In practice the brushes of the switch never pass off of the bank contacts. The normal position of these brushes when the switch is at rest is on the first contact of the bank. It is thus possible to adjust the brushes

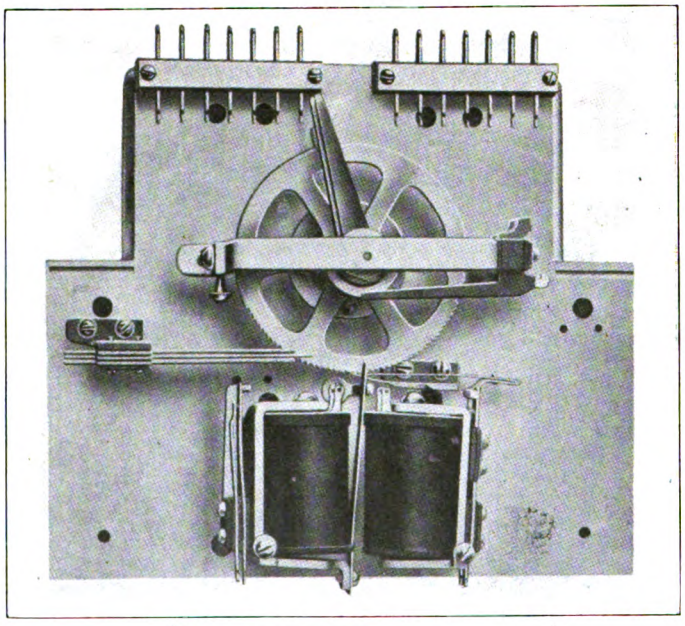

Figure 7.

with a firm spring tension against the bank contacts, thereby assuring a more perfect contact than would be possible were the brushes normally out of engagement with the bank contacts, as has heretofore been the practice. For this reason no calls can be missed by a failure of the brushes to properly enter upon the contacts. The switch has but one movement, namely, horizontal.

Tests have been made in which switches have operated over the entire bank of contacts 500,000 times without intermission or failure, and running day and night for that purpose. As 50 steps are necessary to pass the brushes over the entire bank of contacts, it follows that the pawls engaged the teeth of the ratchet wheel 25,000,000 times in this test. At the end of the test the pawls and the ratchet wheel were found to be in good working condition, showing scarcely any wear, in fact, the teeth and the pawls were not much more than polished. As these are the only wearing parts in the switches, and as the test greatly exceeded the possible requirements of many years of actual service, a further test was considered needless, and it was therefore discontinued.

Figure 9 is a standard central energy wall telephone equipped with substation selector. The only change necessary to convert it into an automatic was to open the line circuit on the rear of backboard, extend the two ends through the backboard, and connect them to the commutator contact of the substation selector. This can be done with any style of central energy wall telephone, moreover, if it is desired to change an existing

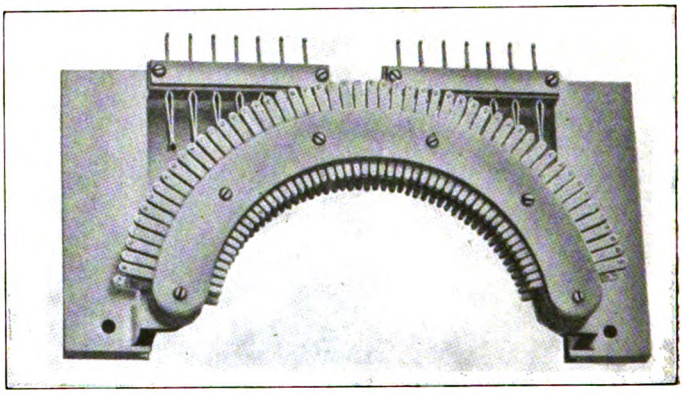

Figure 8.

manual plant to automatic, it can be done without removing the telephone from the premises, and without interruption to the service, except for the brief interval occupied in attaching the substation selector, and after the substation selector has been attached the telephone may continue to be used manually until the automatic central office equipment is installed, at which time it will only be necessary to transfer the lines in the central office from the manual board to the automatic board to complete the automatic service.

As the substation selector is the only piece of equipment located outside of the central office, it has been made exceedingly simple, durable and reliable, to avoid frequent inspection, adjustment and repairs. The additional maintenance on substation apparatus is thereby reduced to a minimum. It will be, in fact, but a trifle over that of a manual telephone, and this, it is believed, will be more than counterbalanced by the reduced cost of maintenance upon the central office equipment.

Each substation set may be supplied with a lamp, if desired, receiving its current from the central office over the telephone wires, lighting the dial as soon as the subscriber removes the receiver from the hook. The light will be sufficient to find the number for making calls, or the numbers in the directory, without first illuminating the room.

To call with this substation selector the receiver of the calling party is first removed from the hook. The

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pin is then inserted in the hole on the dial of the substation selector corresponding to the first number of the combination desired, and by means thereof the dial is revolved to the right as far as it will go, after which it is allowed to rotate back by its own spring tension to its normal position. The operation is repeated for the second, and all following combinations. In rotating backward the mechanism of the substation selector opens and closes a single commutator contact a number of times corresponding to the number of the hole in which the pin had been inserted, thus transmitting its impulses to the switches. With two movements of the dial it is possible to select any of 2,500 subscribers, and with three movements this number may be increased to 125,000 selections. Hanging the receiver on its hook opens the circuit, releases the switches and restores them instantly to normal. The release being instantaneous, it follows that the calling subscriber is immediately able to make another call.

It will be noted that the system of numbering is different from any other system, either the present manual or automatic, and is known as the hyphenated number system, either single or double numbers being transmitted at one time as desired, and as hereafter described.

When a busy telephone is called, an audible busy test is transmitted to the subscriber. In large exchanges it is practicable to use a phonograph, or telegraphone, to announce the fact when a busy line is called.

As there are less switches than there are telephones, the lines being representd by a line and cut-off relay, exactly the same as in manual practice, instead of a switch, it follows that successive calls rarely pass through the same set of switches, hence should a subscriber in making a call happen to select a switch which has for some reason failed, it is only necessary for such subscriber to restore his receiver to its hook, remove it again, and repeat the call. In the latter case an entirely new set of switches and circuits will be assigned. The

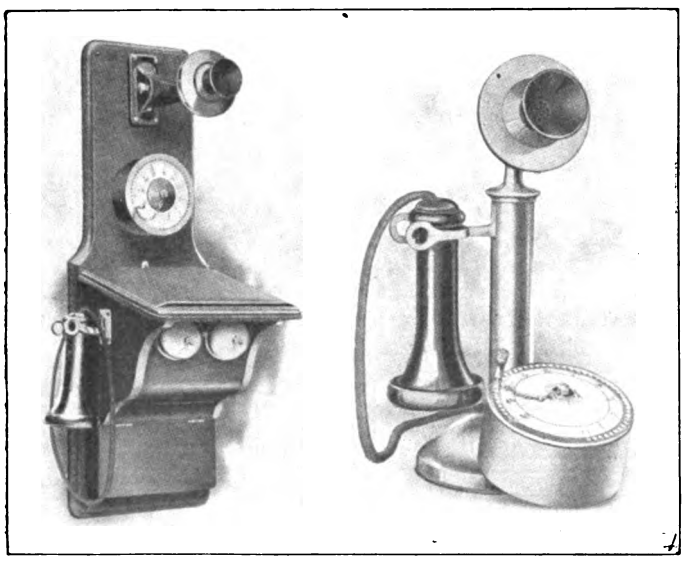

Figure 9. Figure 11.

wire chief, however, will have received notice through lamp supervision of such defective switch, which can, as previously stated, be replaced with a perfect switch in a second or two.

The system herein described is one in which two motions of the dial are used to complete a call. The switches necessary to an exchange based on two motions of the dial are distributer, B, C, D, X, and G switches. When a subscriber removes the receiver from the hook, the talking circuit is closed through the springs of the substation selector, or calling device. This operation energizes the line relay, which removes the ground battery from the contact representing the calling subscriber on a row of semi-circular bank contacts. Above this "busy" row of contacts and swept by wipers mounted on the same shaft, are the corresponding rows

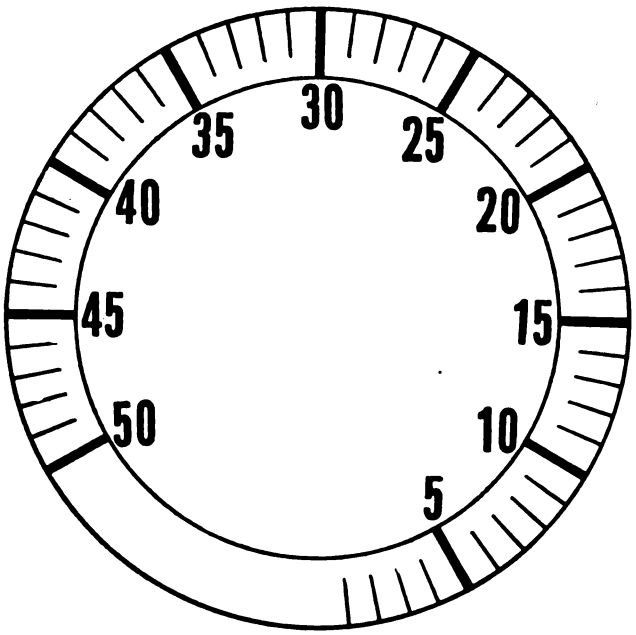

Figure 10.

of "line" and "mate" contacts. Thus on the banks of a "B" switch there are three rows of 50 contacts, representing the "line," "mate" and "busy" of 50 subscribers' lines. On the instant that the line relay acts a distributer switch is started by the forward contact on the line relay springs. This distributer switch in its rotation throws ground on a bank point representing the starter wire of a "B" switch in the group from which the call is to be made, starting it to sweep its arc of bank contacts. As soon as the wipers have traveled to the point from which the ground has been removed on the "busy" row of contacts, the calling subscriber's line has been found, and, having found the caller, it stops, returning ground battery to the point from which the line relay had removed it. In stopping, the "B" switch also throws ground on a corresponding point in a fourth row of contacts on the banks of the "B" switch. This last mentioned ground contact operates the cut-off relay.

On the same instant that the "B" switch leaves its normal position in its search for the calling line, the "X" switch starts to rotate in search of an idle "C" switch. The "B" and "X" switches being in series, then, the subscriber is now connected direct to the line jacks on the "C" switch, which may call into any one of 50 groups, each group representing 50 subscribers. The above operations are all accomplished in from one to one and one-half seconds.

The group to be reached is designated by the first number called on the dial at the calling subscriber's station. The calling device, or substation selector, as it has been named, has only two springs. These, with the receiver hook springs of the common battery variety, are the only springs in the subscriber's station. The springs in the substation selector are normally closed, and are so arranged that the contact is opened and the circuit interrupted when the dial is operated. These interruptions always correspond to the number pulled on the dial, which may be from 1 to 50. Thus, if 35 be pulled on

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the dial, the impulses occasioned by opening the circuit 35 times would be taken up by the mechanism and magnets of the "C" switch, causing it to rotate to the 35th point on the bank contact arc. This 35th point, then, represents a trunk to the 35th group of 50 subscribers. All the trunks to this group are terminated on the banks of the "D" switches for this group, and these "D" switches find the calling trunk in practically the same manner as the "B" switch found the subscriber's line. Then comes the simple operation of calling 21 on the dial and we are connected with the substation 35-21 through the "G" switch, which is the last to rotate. This "G" switch is equipped with a greater number of relays, and has a more complex circuit for purposes of ringing the called subscriber's bells, detecting busy lines, etc. When a subscriber is done talking he hangs up his receiver, which makes his line test open. This permits certain relays on the switches to make back contacts, which operate to release the call, and restore the switches to normal.

On party lines in this system the group of 50 subscribers is in reality four groups, on the banks of which are represented 50 line circuits. A certain number (any that is desired) of "G" switches is supplied with 16 cycle harmonic ringing current, then for each of 33, 50 and 66 cycle ringing current the same number of "G" switches are installed. To the banks of all these "G" switches all the 50 line circuits are multiplied straight through, so that the initial number of the call to any one of these party line subscribers merely indicates which ringing current is desired on any one of these 50 lines.

Figure 10 shows the exact size and style of dial numbering. The lines coincide with the holes on dial Figures 9 and 11, the latter being a standard desk stand with substation selector attached.

Simultaneous Telephone and Telegraph

By Frank M. Slough and M. E. Taylor

IN previous articles we have described theoretically the method of connecting impedance, repeating coils and composite circuits to telephone lines for simultaneous telephone and telegraph purposes. In this issue we will describe a few of the various kinds of equipment generally known as test panels and mounting boards and their circuits as used for connecting and testing both the telephone and telegraph equipment.

It is necessary to subdivide this subject, due to the fact that test panels used for the smaller companies would be worthless for the larger ones, both from the circuit and equipment point of view, for the reason that larger and more modern equipped panels are more generally equipped with volt and ammeter, galvanometer, bridge and differential relays which require the attention of experienced operators.

We will first describe the inexpensive panels such as are used when only a few lines are in use for simultaneous operating and when only simplex or impedance methods are used. The object of the test panel is to conveniently test the telephone or telegraph circuits or provide for changing the telegraph connection from one toll line to another at such times when the working line becomes grounded or both lines become broken or even when the repair work requires the opening of one or both wires. Thus, in the latter case, it is necessary to provide apparatus for easy access in testing the lines on which the telegraph circuits are to be used and to be able to change this service from one circuit to another without interfering to any great extent with the telegraph service.

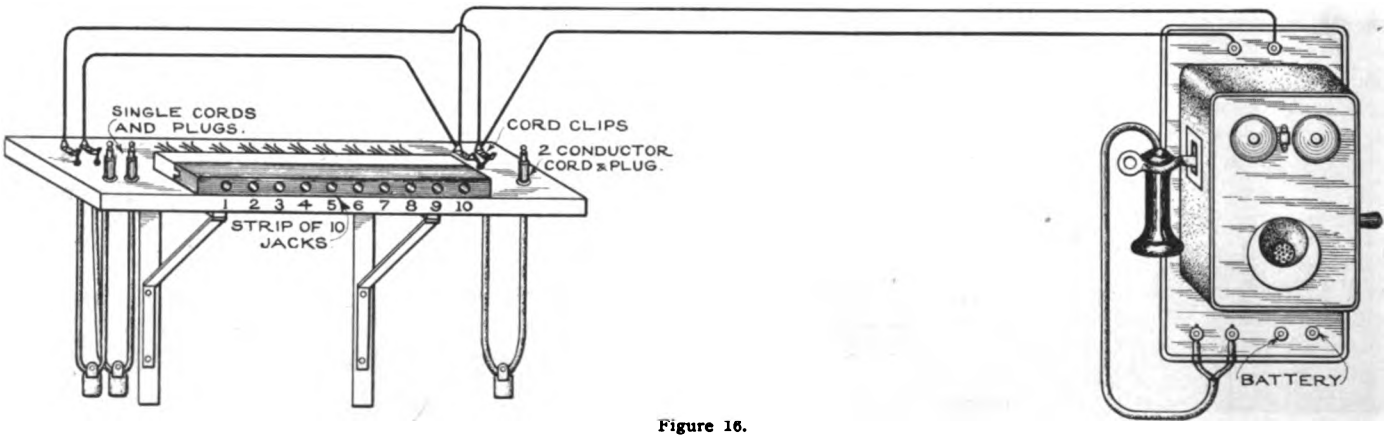

Figure 16.

Figure 17. Two Conductor Plug-ended Cords Used to Build up Circuits for Simultaneous Telephony and Telegraphy.

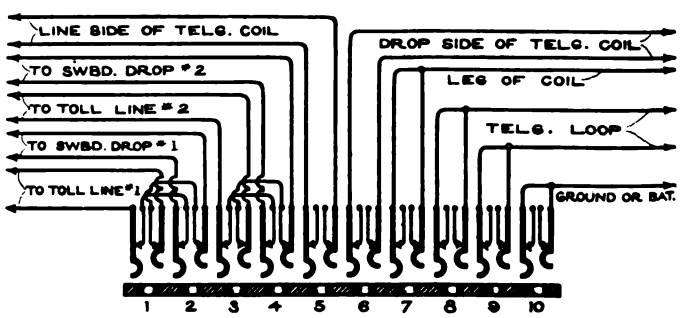
LINE SIDE OF TELG. COIL
TO SWBD. DROP # 2
TO TOLL LINE # 2
TO SWBD. DROP # 1
TO TOLL LINE # 1
DROP SIDE OF TELG. COIL
LEG OF COIL
TELG. LOOP
GROUND OR BAT.
1 2 3 4 5 6 7 8 9 10

Figure 18. Circuit Connections of Jacks Shown in Figure 16.

Figure 16 illustrates a simple and inexpensive method for connecting and testing two different toll lines on which telegraph service can be given. For this pur-

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pose any standard strip of 10 jacks and a series magneto local battery telephone can be used to good advantage. A few short one and two conductor cords—plugs attached to each end, as shown in Figure 17, in addition

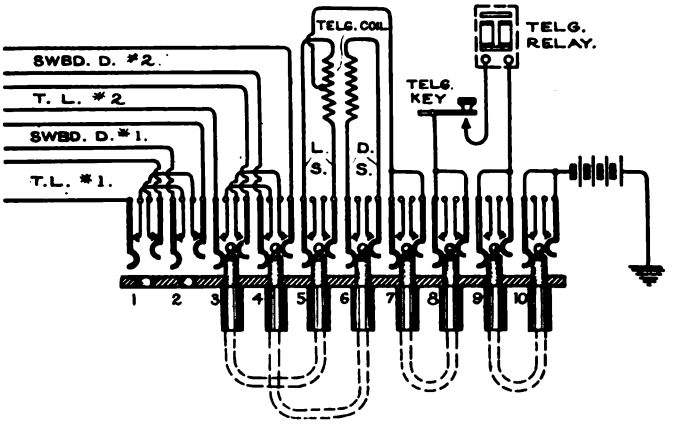

Figure 19. Connections Made with Short Cords Connecting Toll Line No. 2 for Telegraph Service.

to cords connected to the telephones, completes the equipment for this style of a panel. Any number of jacks can be arranged in a similar manner or in a cabinet for a greater number of lines. Yet it is not advisable to use

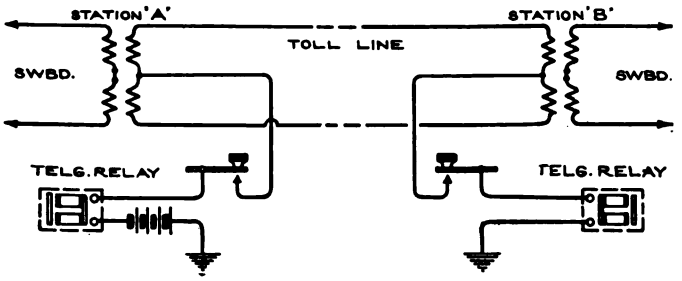

Figure 20. Circuit Connection for Telegraph Service Between Stations A and B.

regular jacks for large panels, as individual jacks should be used on account of reducing the chances of high resistant crosses and giving a more permanent contact.

Figure 18 describes the circuit connection as used

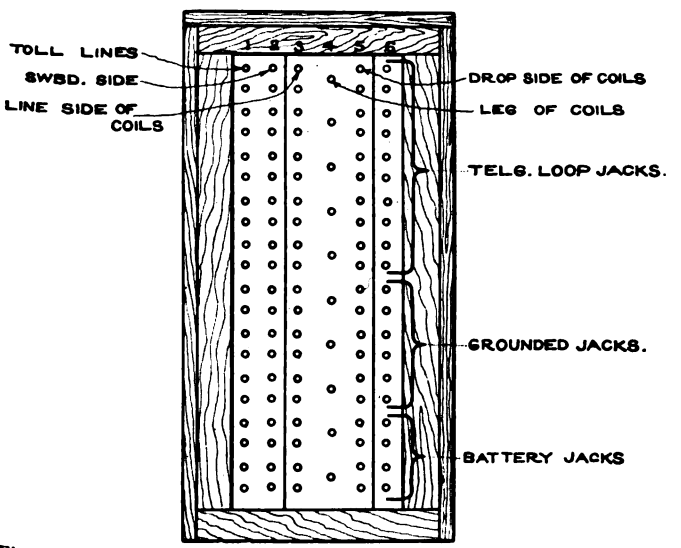

Figure 21. Test Panel Equipped with Individual Jacks Mounted on Hard Rubber.

with panels shown in Figure 16 and which shows each jack connection. The cords referred to in Figure 17 are used for connecting one jack circuit to another as illustrated by dotted lines in Figure 19, as shown between jacks 3 and 5, 4 and 6, 7 and 8, 9 and 10. In the latter two connections it is not necessary to use a two conductor cord and plug as a solid plug will answer the purpose. The cords shown on either side of the panel (Figure 16) are connected for telegraph terminal service with short cords in which the dotted lines show a short method of circuit and plug connection. A duplicate of this connection on a similar panel station *B* will complete the telegraph service from *A* to *B*, as shown in Figure 20.

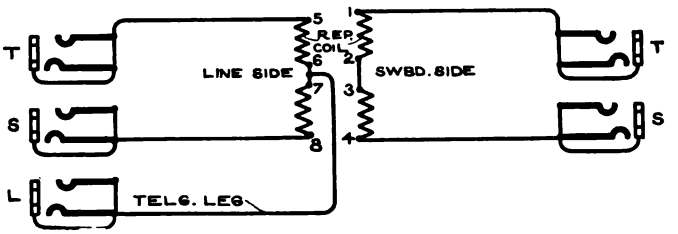

Figure 22. Connections of Coil to Individual Jacks on Test Panel.

With the above equipment and circuits it is easy to see how the telegraph circuit can be changed from one toll line to another by simply removing the plug from jack 3 and placing it in jack 1. Likewise the plug of jack 4 in jack 2 will make the same change at station *B*.

With the use of jacks connected in this manner, it is very easy to make the tests required in ordinary practice. For example, if you wish to test line No. 1 for service conditions, insert a dummy plug into jack No. 2 (Figure 18). This will open all connections between line and switchboard. Then insert a conductor plug, which is

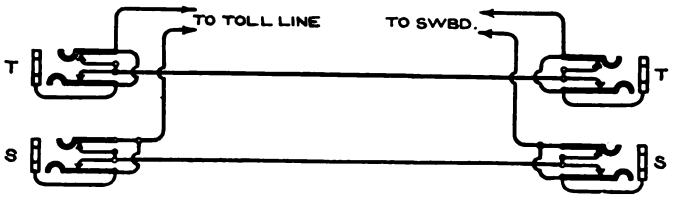

Figure 23. Connections of Toll Line and Switchboard to Test Jacks.

connected to tip and sleeve of the telephone (described in Figure 16) into jack No. 1. This method duplicated at exchange *B* gives the test for line conditions. A galvanometer or voltmeter and bridge can be connected to line circuit instead of the telephone in a similar manner. Ground and battery can also be connected to line for various tests. Incidentally, the dummy plug suggested should be of non-conducting material, such as hard wood or hard rubber, or a two-conductor plug substitute with the contacts open.

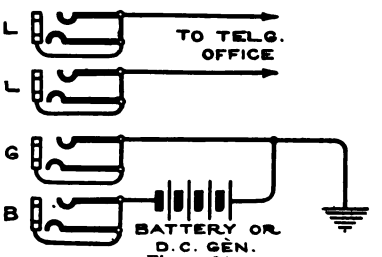

Figure 24.

Fig. 25—Twin Plugs Used on Latest Types of Test Panels.

All changes or tests are thus made by the use of such panels without interfering with any regular or soldered connection, reducing loss of time and service which, alone, is a large item and should be well considered in both telephone and telegraph practice.

In Figure 21 is shown the layout of the panel in which individual jacks are used. This plan may be en-

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larged upon to adopt any number of lines for simplex and composite circuits. The one shown, however, is only arranged for an ultimate capacity of 10 toll lines, 10 simplex or repeating coils, 10 telegraph legs, 5 telegraph loops, 6 grounded jacks and four battery jacks.

The object of the individual jacks is to be able to separate both tip and sleeve sides of line in testing and to give higher insulating resistance between the tip and sleeve of the same circuit and to make better contact connections in the jacks. The arrangement of the different panels is as follows:

Beginning at the left end side of the panel are toll lines one to ten corresponding with the toll lines in the second row of the switchboard jacks. The third row is the line side of telegraph coils, and next to these are the

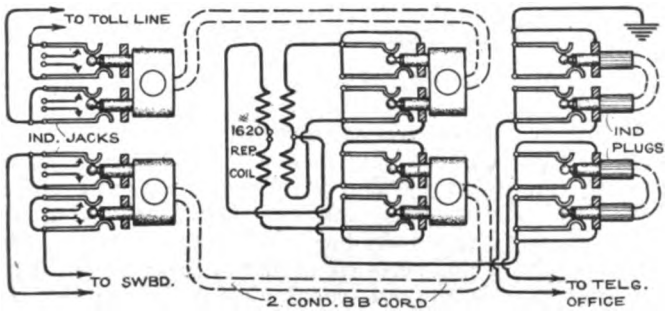

Fig. 26—Method of Building Up Telegraph Circuit on Test Panel.

corresponding legs of coil. In the fifth row are the drop coil jacks. From one to five in the sixth row are the telegraph loops which should connect to cross connecting frame through a high current arrester from where the connection is made with the line cable through which the telegraph or broker's office, receiving telegraph service, is connected. Jacks from 6 to 8 in the last row are grounded and used for testing or for completing a tele-

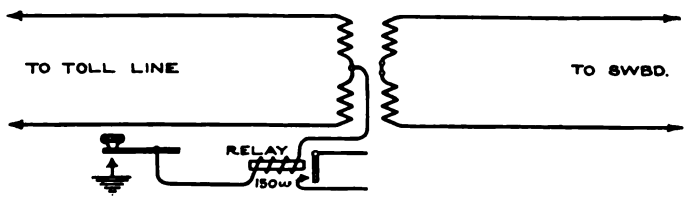

Fig. 27—Showing Circuit Completed.

graph circuit. The last four jacks are connected to battery.

Figure 22 illustrates the circuit connection of the repeating or simplex coil as connected to the individual

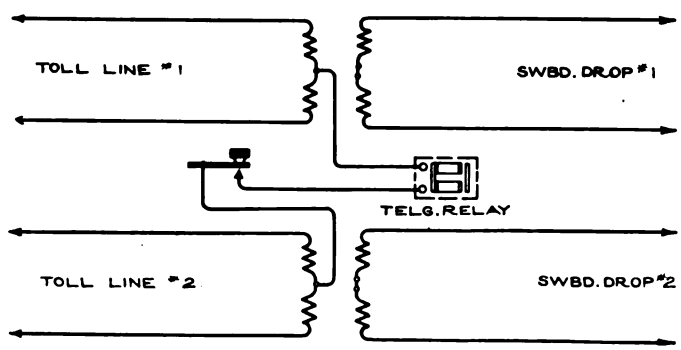

Figure 28. Method of Looping Telegraph Circuit to a Second Toll Line.

jacks shown in row 3, 4 and 5 in Figure 21.

Figure 23 shows the line and bridge connections to the test panel, jacks of which are mounted in row 1 and 2.

Figure 24 represents the telegraph loops and ground jacks as designated in the last row of the panel.

For convenience in connecting one circuit to another it is well to use twin plugs, illustrated in Figure 25. For example, connecting toll line No. 1 with short cord with the twin plug at each end and through tip and sleeve of line jack to line side of coil. A second short cord and twin plug through tip and sleeve side of drop jack to drop coil jacks. By inserting the plug in line jacks we have opened the spring contacts which connect a toll line through drop jacks to switchboard. With this connection of cords and plugs a repeating coil is placed in circuit between the line and switchboard, illustrated in Figure 26, and from the leg jack of this coil connection is made to one side of the telegraph loop. From the opposite side of the telegraph

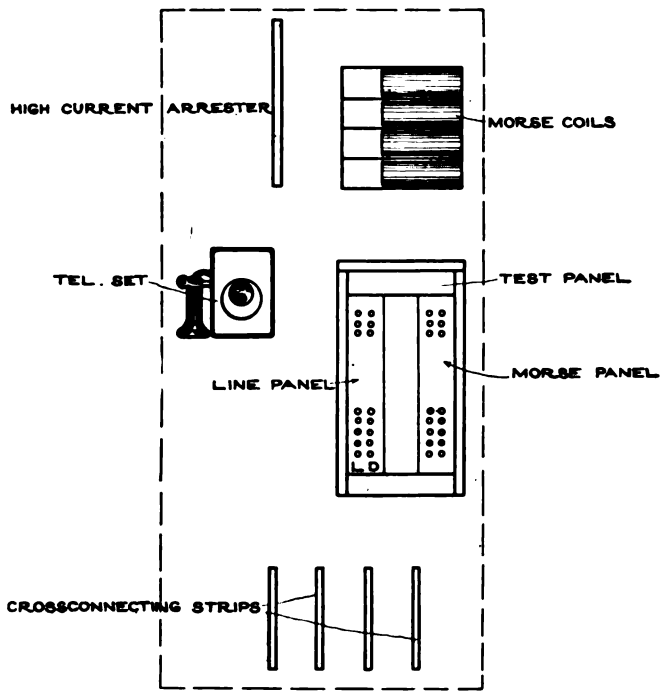

Figure 29.

loop connection is made to ground jack. Connections are thus completed and represents the circuit as illustrated in Figure 27.

Where the telegraph circuit is to be continued to some other city or town over a second toll line the latter connection between the loop and ground jack should be changed by removing the plug connected to ground and place it in the jack of the coil of which it is to be used for connecting a second toll line over which the service is to be continued to the town, to which the telegraph loop is grounded or through battery to ground. The arrangement showing a through connection for through telegraph service is clearly shown in Figure 28.

A variety of different styles and layouts, as used for this construction of small test panels, is given in the foregoing descriptions, and it is not necessary to give further details concerning the variety of small types.

Figure 29 gives the mounting board, arranged with coils, arrestors, cross connecting strips, test telephone and test panel, all arranged on the same mounting board or wall.

Fortunately the diagrams presented in connection with this installment leave comparatively little for the authors to explain.

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Ohio's Annual Convention

OHIO has a way of its own, which was amply demonstrated at the annual convention of the Ohio Independent Telephone Association, held in the Hartman Hotel, at Columbus, March 28. Two important facts were developed at this annual gathering, namely: That there are installed in the state of Ohio nearly half a million Independent telephones, and that twenty thousand of these are installed in Columbus, the convention city.

Ohio is divided into nine operating districts, each of which comprises a number of counties. With one exception, every county in the state was represented in the convention by a delegate. The program for the convention proper included the following addresses:

"Present Conditions," J. B. Hoge, Cleveland; "Changed Conditions," J. H. Ainsworth, Dayton; "Telephone Securities," Cyrus Huling, Columbus; "Co-Operation Between Local and Long Distance Companies," Stacey B. Rankin, South Charleston; "The Independent Telephone in the Public Eye," James S. Brailey, Jr., Toledo; "Telephone Law in Ohio," C. B. Mathews, Cincinnati; "Taxation," Frank A. Davis, Columbus; "Advantages of Consolidation," W. W. Fisher, Bellefontaine; "Sterilization and Preservation of Telephone and Telegraph Poles," H. P. Folsom, Circleville; "Power and Force of the Independent Telephone Association of Ohio," Judge James I. Allread, Greenville.

President Beam of the Association introduced Mayor DeWitt C. Badger, who welcomed the delegates. Dwight E. Sapp of Mount Vernon responded to the mayor's speech, telling, at considerable length, of the evolution of the telephone in the state, pointing out the early struggles and subsequent triumphs. In the course of Mr. Sapp's remarks he recalled the first convention of Independent operators, which was held in one of the back rooms of the Chittenden Hotel in 1895, when but three Independent telephone exchanges were established these being located at Mount Vernon, Norwalk and Chillicothe. He showed that the Independent telephone system of Ohio today represents an investment of more than $35,000,000, and from the three original exchanges have developed a system having 835 exchanges and 1,663 toll stations. The industry is backed by 24,050 stockholders.

President Beam's address was devoted principally to outlining the detail work of the state association during the past year. He referred to the great progress made and said that it was due to the vigorous competition. In speaking of telephone securities, Mr. Beam said there were "no better securities on the market." While he was deeply gratified with the work that had been accomplished, he urged continued activity and hearty co-operation among the officials and stockholders. With the exception of Hamilton county, the Independents have systems covering the entire state. The address follows:

Gentlemen of the Convention: For the third time I congratulate you upon the success that you have wrought the Independent telephone movement in Ohio, and upon your full attendance here today.

In the beginning, many prominent telephone men connected with both the Bell and Independent companies, and many leading financiers, predicted that the Independent telephone movement, which had made such rapid strides throughout the land, was a mere matter of sentiment and that this sentiment would not endure for any considerable period of time, claiming that separate and individual companies could not combat with a strong monopoly in respect to service, either as to quantity or quality.

They claimed that it could be nothing but a reaction stimulated by the high rates, poor service, and every affront that the Bell monopoly had forced upon the people for the past quarter of a century.

But, gentlemen, you know the result. The Independents stand practically supreme in the state of Ohio today. Every local company in its own field has downed the octopus, and this organization is the keystone of this supremacy.

Your loyal support and enthusiasm shown at this meeting declares that the sentiment you exhibited over ten years ago has redoubled, along with the phenomenal growth of this great Independent telephone movement.

Therefore, we have either completely outdone our rivals beyond the calculation of the most optimistic, or those gentlemen who predicted such destruction for Independent telephony were utterly wrong.

President Beam and the "Ohio Idea."

The literary bureau of the opposition has done everything in its power to quench Independent progress by sending out anonymous pamphlets and circulars to intimidate investors in Independent telephone securities, and, further, to educate the people that the telephone business was a monopoly, and a dual service a nuisance and an additional burden on the people.

This is not true, as time and experience have shown. They do not show in any of those statements the growth of their own system or the growth of the Independents. They do not tell you what twelve years of competition has done for them, and the great benefit the public are deriving as a result of this competition.

In 1895, less than 45,000 telephones were in service in the state, while today there are over 425,000 on the two systems, and the rental charged for the dual service to those who find it necessary to have both systems is only a slight advance over the exorbitant rate charged before the public had competition. And this small amount is saved many times a month by reduced toll rates brought about by competition.

The additional facilities for long distance, with the great number of exchanges and toll stations installed, with the thou-

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sands of miles of toll line to connect up and make a complete system, has all been done in so short a time that the public does not fully appreciate it, until they look back a little over ten years and recall what a single telephone service was and what it would mean to return to that kind of service.

If the opposition could succeed in its educational work and have the public thoroughly convinced that a single telephone system is the proper thing, we would heartily co-operate with them and leave it to a vote of the people which service is the more efficient and the one to be retained.

With over 25,000 stockholders in the state and more than double the exchanges toll stations and subscribers, we need not fear the result.

One of the later pamphlets widely distributed by the Bell Company and edited by a Boston attorney in behalf of the New England Telephone & Telegraph Company, attempts to show that dual service and competing companies operating in the same field is not desirable for the general progress of business, and for the betterment of telephone users.

His argument falls under two heads, namely: First, Does competition give more and better telephone service to telephone users? Second, Are the bonds and stocks of Independent competing lines safe and desirable investments for those having savings to invest?

This gentlemen, as I have said before, was employed by the Bell company and as a natural result, gave his opinion in the negative.

Upon a little reflection you will readily see that these two issues are the ones that the Independents have had to contend with in their opposition to the Bell Company from the very beginning. I shall refute these two arguments by giving you exact facts of the state of affairs in Ohio and thus show to you that this gentleman is absolutely wrong in the conclusions that he has drawn. His article is entitled, "Telephone Competition in the Middle West," therefore his subject embraces conditions in Ohio, and, when talking on that subject we are discussing conditions on a common ground.

I will restate his first proposition: "Does competition give more and better telephone service to telephone users?" Now for the facts: In 1895 there were less than 45,000 telephones in service in Ohio and with less than 50 per cent of the counties in the state without a telephone exchange and a great many of the counties without even a toll station. Gentlemen, this was the complete development that the Bell Company had made during eighteen years of exclusive control.

It is, of course, hardly fair to say just what the Bell Company would have done from 1895 up to the present time, but judging from its previous consideration of business men and subscribers generally, it would not have accomplished very much more in developing this great field in Ohio.

Take into consideration what competition has done for business men, manufacturers and resident subscribers in cities, towns and rural districts. Today there are over 290,000 Independent telephones in service. Every county in the state with the exception of one has been developed by the Independents. There could not possibly be a stronger refutation to this first proposition than these actual facts which no one questions.

Now for the second proposition: "Are the bonds and stocks of Independent competing lines safe and desirable investments for those having savings to invest?" You know how few Ohio men held stock in the Bell Company in 1896. You know how impossible it was for small investors to get any of the securities. The Bell Company has even declared that the telephone business from its very nature was a monopoly. At present the Independent telephone companies in Ohio are controlled by over 25,000 stockholders. Every local company is paying dividends and very few of the companies have any considerable amount of stock on the market. How many of these 25,000 stockholders are desirous of disposing of their holdings? If they have such desire, there are many ready and willing to take them.

This certainly demonstrates to you that bonds and stocks of Independent competing lines are safe and desirable investment for those having savings to invest.

But we must not allow our past success and over-confidence in the future to in any way interfere with or retard continued development. There seems to be an unlimited demand for telephone service and every company should be in position to meet all demands for service promptly. Not to do this forces business to the opposition which will add to their strength or encourage the organization of mutual companies which have proven a source of annoyance in many ways. Some of you have had more or less experience with this kind of competition.

In closing, I wish to say a few words regarding the Association—the importance of maintaining and attending the meeting. This organization is not for a day, but for the future. The association has grown to such importance that prominent men from all over the state are giving up their time, not only to attend the state convention, but also the district meetings. Our district meetings have proven a great success and have accomplished more for Independent telephony than any one thing the association has done. When you consider for a moment that in Ohio we have over 400 incorporated telephone companies there must be something in the way of an association to bring the various companies together.

The first state association was organized at the very beginning of Independent development as early as April 29, 1895, at the Chittenden Hotel, this city. Article II of the Constitution reads as follows: "The object of this association shall be the mutual protection and connection of all local telephone exchanges in Ohio."

That one article in the constitution seems to cover everything of importance and the faithfully sticking to the old constitution and the idea of mutual protection and connection of all local telephone exchanges in Ohio has brought the development in the state far beyond all expectations.

At the conclusion of the president's address the following committees were named:

Auditing—George H. Metheany, Lima; J. B. Rhodes, Zanesville; George A. Ford, Toledo.

Nominations—R. E. Hamblin, Toledo; A. J. Cullen, Elyria; G. A. Thorpe, Wilmington.

Legislation—W. G. Thompson, Hamilton; Dwight E. Sapp, Mount Vernon; James S. Brailey, Jr., Toledo; Frank A. Davis, Columbus; C. Y. McVey, Cleveland.

Constitutional Amendments—W. L. Carey, Jr., Cleveland; H. P. Folsom, Circleville; H. C. Devine, Mount Vernon.

Jas. B. Hoge, president of the International Independent Telephone Association, was the first speaker at the afternoon session. He treated present conditions of the business from the standpoint of the International organization. Considerable interest was manifested in the address of J. H. Ainsworth of Dayton. Mr. Ainsworth is a recent recruit to the Independent ranks, and the paper is printed in full in another part of this edition of SOUND WAVES. "Telephone Securities," by Cyrus Huling of Columbus was most instructive in its comparison of the present demand for telephone stocks with the trouble financiers had a number of years ago in floating similar paper. The earnestness with which Mr. Huling presented his facts convinced the delegates that he had made a deep study of the question.

The delegates were as much interested in the addresses of Messrs. Rankin, Brailey, Matthews, Davis and Fisher. Each speaker was given hearty applause and careful attention. The address of H. P. Folsom of Circleville was something out of the usual order. We are giving a synopsis of the subject, "Sterilization and Preservation of Telephone and Telegraph Poles," in another part of this edition of SOUND WAVES, and would recommend its careful reading. The concluding address was that of Judge James I. Allread of Greenville, and while this was not of great length it was especially interesting because it dwelt principally on the rapid rise of the association, its method of organization and its growth as an influence to favorable financial conditions. The address follows in full:

This subject might well have been assigned to other and abler hands. It is one most vital to your assembly. It is the asking, or rather the answering of the question, why are we here?

This is an age of organization. Many are good, some are bad. But whether good or bad, organization increases the efficiency, power and force. In organization there is strength. This is exemplified by the superiority of a band of soldiers over an unorganized mob of many times the number. The day of individual enterprise is almost past. Combinations of capital and combinations of men are now required in almost every department. The combined judgment of half a dozen men is better than that of each acting individual. One proposes, the other passes judgment, and only the fittest ideas survive.

The Independent Telephone Association is a natural result. Like Topsy, it "just growed." It followed from the very

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nature of the growth and development of the business. When two or three neighboring farmers buy their telephones, put up the poles and string wires, it constitutes the simplest form of a telephone company. The stockholders are the patrons, and the patrons are the stockholders, but it is nevertheless an organization. The farmers so connected are more closely identified, more deeply interested in each other, both socially and in business. Next higher in the point of importance is the town exchange. Here, for obvious reasons, the patrons are not all stockholders. The plant is built and equipped largely by public spirited citizens, and maintained on the principle of the largest extension of the service at the most reasonable rates. It is a town enterprise. The citizens are thus brought together in one association. To the town exchange is added the country lines, thus bringing the whole surrounding country into one organization, with the town as the nucleus. The improvements become a matter of town pride. It facilitates the transaction of business and brings the whole community more closely together. The merchant and his customer, the lawyer and his client, the physician and his patient, are thus brought within speaking distance and the benefit is mutual. The growth of the telephone business has been so gradual that we scarcely realize the convenience unless an accident happens to the telephone and we are shut off suddenly from the balance of the world.

From the town as a nucleus the lines are extended to the nearby towns, and then to the long distance system. The telephone organizations have kept pace. They were found first in the towns, next in the county, then the district, and finally the state. The Independent system arose out of a popular demand for better, cheaper, and more extended service. Twelve years ago there were only 45,000 telephones in the whole state, and but half the counties had telephone exchanges. Today the Independent company alone has 300,000 telephones and 835 exchanges in operation in the state, with an investment of thirty-five million dollars, contributed by 25,000 stockholders.

These stockholders are the bankers, the merchants, the aggressive business men of every city, of every town, and every hamlet. They are the men who make things go in their towns and counties and districts. Their delegates are assembled for consultation. Out of this exchange and interchange of ideas will come improvement. The best ideas will be taken home and applied, and the influence of your deliberations will be felt in the management of the local associations throughout the state.

The Independent Telephone Association is the opposite of a monopoly. Its purpose is to extend the telephone service to every home, both town and farm, to better the equipment and service and to maintain it at reasonable cost. This association has no fenced in territory—no preserves. It maintains its prestige by sheer force of its superior service and its reasonable rates. It welcomes opposition and only asks a fair field and no favors.

This organization comes from the bottom up and not from the top down. The local town organization is the entity—the unit, and its delegates sustain and constitute the district and state associations. The idea is popular. It is a species of home rule. Each company has to deal with its own people, and the people or patrons deal with a home company. The splendid results attained in the twelve years of development speaks for itself as to the power and influence of the Independent Telephone Association backed by its 25,000 stockholders and 300,000 patrons.

The past is secure, but now what of the future? What does the association plan? Simply the extension of the service in the territory already acquired and the acquisition of new territory in which to serve the people with better service and cheaper rates. If there is any territory not open to your competition, plan a campaign against it. Use moral suasion, if that will do, and if not employ business reciprocity and business retaliation. Remember that thrice is he armed that hath his quarrel just, and with the force which backs and supports the Independent Telephone Association organization in a just cause there can be no result but ultimate success.

At the close of the formal discussion of the program, President Beam called for questions for informal discussion. Jas. B. Hoge opened this discussion with the question concerning farmer mutual telephone companies and invited expressions from the delegates on the subject. It was Mr. Hoge's belief that a great deal of the trouble caused by mutual associations might be remedied through the supply dealers. Mr. Hyde took issue with Mr. Hoge's suggestion, and said that he believed the farmer mutual companies have as much right to build and operate telephone plants as anybody else. He requested the convention to treat this matter in fairness and said that in his part of the country the farmers were building lines in all directions. A. W. Richardson was favorable to Mr. Hyde's argument.

After the close of the discussion, in which a number of delegates participated, a report of the nominating committee was called for. The recommendations of this committee met with hearty approval of the delegates, who proceeded with the election of the old officers, as follows: Frank L. Beam, Mount Vernon, president; O. O. Welsheimer, Columbus, secretary; Ralph Reamer, Columbus, treasurer.

As delegates-at-large to the International convention the following were selected: Frank L. Beam, Columbus; Dwight E. Sapp, Mount Vernon; James B. Hoge, Cleveland; James S. Brailey, Jr., Toledo; W. Gilbert Thompson, Hamilton; H. P. Folsom, Circleville; I. H. Thiedick, Sidney; G. P. Thorpe, Wilmington; J. B. Rhodes, Zanesville; C. Y. McVey, Cleveland; Louis Brucker, Mansfield; Cyrus Huling, Columbus; F. A. Davis, Columbus; Washington Hyde, Warren; D. M. Odaffer, Marion; R. E. Hamblin, Toledo; Charles Hollender, Newark; George M. Adams, Millersburg.

The alternates at large are: L. H. Beatty, Ravenna; H. L. Clark, Ada; W. W. Morrison, Toledo; C. L. Norton, Cleveland; Leo Flehr, Piqua; Dr. C. Jones, Athens; A. J. Curren, Elyria; A. V. Hageman, Lorain; William Hoyle, Cambridge; L. Goge, Wapakoneta; Clarence Brown, Toledo; C. M. Grauel, Painesville; C. R. Newberry, Ashtabula; J. R. Johnson, Sandusky; D. A. Yoder, Bowling Green; D. E. Fuller, Clyde; E. E. Knox, Portsmouth; C. H. Marvin, Urbana.

From the nine districts of the state the following were named as delegates to the International convention:

District No. 1—F. A. Knapp, Bellevue; E. L. Coen, Vermillion.

District No. 2—W. F. Laubach, Akron; J. F. Smith, Cadiz.

District No. 3—A. H. Doudna, Bridgeport; A. B. Hobson, Flushing.

District No. 4—H. A. Marting, Ironton; G. A. Schleyer, Circleville.

District No. 5—William R. Fee. Milford; Charles E. Biehn, Georgetown.

District No. 6—John A. Ainsworth, Dayton; W. W. Fisher, Bellefontaine.

District No. 7—George H. Metheoney, Lima, J. A. Longwell, Van Wert.

District No. 8—E. L. Barber, Wauseon; J. G. Steinkamp, Elmore.

District No. 9—G. R. Johnston, Columbus; A. A. Whitney, Mt. Gilead.

In the evening 200 members and guests of the convention sat together at the banquet table, presided over by Dwight E. Sapp as toastmaster. At this table were ministers, newspaper men, physicians, farmers, lawyers and bankers. Gov. Harris responded to the toast "Ohio," Clarence Brown of Toledo responded to "The Telephone Situation" from the point of view of professional and business men, Rev. S. S. Farmer responded to the toast "Modern Miracles," Henry A. Lanman responded to "Telephone Securities," Norman McLoud to "The Wireless Telephone," C. R. Krickenberger to "Hello," Dr. Alfred Robinson to "Pride." Interspersed with these several interesting topics were songs by a quartet.

For Public Telephone Service.

The agreement with Edmonton regarding the extension of the Lorimer automatic telephone system was submitted to the Strathcona council, and after a lengthy consideration it was agreed to, with minor amendments.

Some Questions Answered

By Arthur Bessey Smith

Editor SOUND WAVES: How may the permanent magnets of a generator be magnetized as strongly as possible?

2. Why will a condenser bridged across the line in a Warner pole changer prevent noise on adjacent circuits?

3. Is there any difference in result between two induction coils which have the same number of turns of wire in the primary and secondary winding respectively, but only differing in the number of ohms in the primary and secondary of each respectively? Why?

4. What causes a telephone to hum when the receiver is held directly in front of the transmitter?

1. Hand generator magnets are usually magnetized by placing them across the poles of a powerful electromagnet, which is excited from some direct current source, such as the lighting mains, 110 volt or 220 volt, or the power circuit at 550 volts. The pole pieces of the electromagnet are at the proper distance apart so that one leg of the generator magnet can rest on one pole and the other leg on the other pole. This is the usual factory method

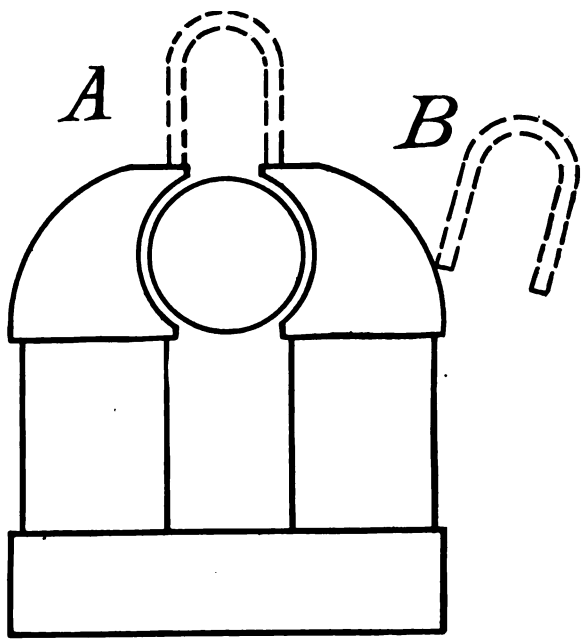

Figure 1.

and seems to be the best practical way. If you do not have access to such a magnet you may do the work with some motor or dynamo that may be in use within your reach. If the pole pieces of the dynamo are close enough together, as at *A* in Figure 1, you can get a very powerful action by placing your generator magnet as shown by the doted lines.

If the dynamo or motor does not have the pole pieces shaped so that you can get across both of them at once, you will be obliged to do the best you can by placing one leg of the magnet on one pole piece as at *B*, in Figure 1. Then remove it and place the other leg of the magnet on the other pole piece. This should give you a fairly good magnetization, though not nearly as good as the first method outlined. A very powerful magnetizing force is necessary to give all the molecules of the hard steel bar the proper magnetic set. Of course, you could wind a coil yourself which would do the work on current drawn from 24 volt exchange battery, if the battery could furnish enough current, but it would not pay.

2. Inductive noises on telephone circuits are usually caused by changes in voltage on the disturbing wire near it. The more sudden the change the greater will be the induced current in the adjacent line. In the case of the Warner pole changer ringing on the line, the change is exceedingly abrupt. At one instant there is no voltage at all, the next instant the full voltage of the battery (between 75 and 100 volts) is thrown on, and the result is an inductive disturbance against which it is almost impossible to transpose. If now a condenser be connected across the circuit, the first momentary rush of current into it will prevent the voltage of the line from rising as rapidly as it otherwise would. This removes the sharpness of the ringing wave, and reduces or nearly eliminates the objectionable noise.

3. The exact meaning of this question is not as clear as it might be, but I take it that you mean the following: Suppose coil 1 to be wound with No. 36 wire in the secondary and coil 2 with No. 30 wire to the same number of turns. The change of size of wire is necessary to get the changed resistance which you suppose. The main effect will be that coil 2 will talk somewhat better than No. 1, because of its lower resistance. It will also allow you to hear better since all the talking current that you receive must come through it, and it acts as so much useless resistance. In the case assumed, coil 2 would have about one-fourth the resistance of No. 1. A change of three sizes in the wire gage changes the resistance per foot by 2, multiplying as you ascend the scale and dividing as you go down. The resistance of No. 2 would be a little greater than one-fourth because the larger wire will occupy more space than the smaller, so that a greater length will be required to be wound on to get the full number of turns. If you had a different meaning from this, let me hear from you again. Draw a sketch with sizes, turns, etc., indicated on it.

4. When a receiver is held in front of a transmitter of the telephone to which it is connected, nothing will happen if the air and the transmitter are quiet. But if the resistance of the secondary circuit be sufficiently low, and the transmitter be tapped or a sufficient noise made near it, the howl will commence. The vibrations of the transmitter diaphragm cause variations in the resistance of the granular carbon in the button. This causes variations in the current flowing in the primary circuit, which induces an alternating current in the secondary winding of the induction coil. This alternating current flows through the receiver, setting the diaphragm into vibration which sends off vibrations into the air in the form of sound. These sound waves strike the transmitter diaphragm and help it to vibrate more strongly. The sound is thus kept from dying out, and it is maintained with more or less loudness, according to the resistance of the circuit and the volume of space between the two diaphragms.

Editor SOUND WAVES: In charging a storage battery, I understand that it is necessary to give the battery an overcharge at stated intervals. This we have been doing. How long should we run the overcharge after the gravity stops rising? Is an hour and a half too much at the normal rate? Will it decrease the active element of the cell?

The usual rule is to prolong the overcharge till the specific gravity of the pilot cell shows no rise for half an hour. It will not hurt the battery if it is carried on for an hour, but not longer. To run very long overcharges often means to shorten the life of the cell. The continued boiling away of gases, after passing the point where they

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can be of service in converting the sulphate back into active material, will only tend to loosen the active material. All active material which has been loosened may as well be detached from the grid and taken away, for the ability of it to do the work depends on its close adherence to the grid. Be cautious about too much overcharging, unless you have a diseased cell, in which case it must be treated by itself and at a rate lower than the full normal charge rate.

EDITOR SOUND WAVES: What is the difference between pulsating, undulating and rectified currents?

The meanings of these various names seem not to be clear to many people. Even electrical people often use them loosely and that is the reason why many telephone men get mixed up. As used in telephone work, the term "pulsating" is applied strictly to an alternating current of which all the pulsations which flow in a given direction have been suppressed. At *A* in Figure 2 will be seen in diagram this kind of current. The solid lines, together with the dotted line, show the full alternating current. If we wipe out all the portions of the current below the line *X*, we have left a true pulsating

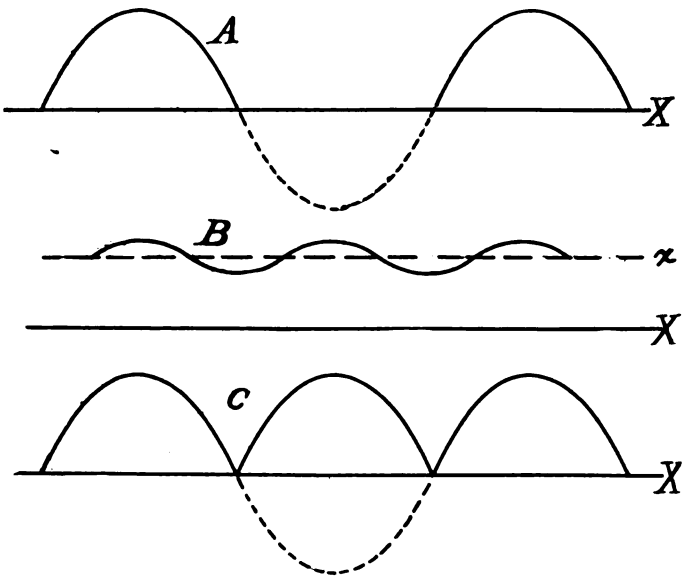

Figure 2.

current as known to telephone men. This is used most in ringing biased bells on selective lines. A rectified current is an alternating current with all the negative pulsations reversed and made to flow in the same direction as the positive pulsations. This is shown at *C* in Figure 2. An undulating current is one which flows in the same direction all the time, but constantly changes in value. It is shown at *B* in the same figure. The primary current in a local battery telephone is of this nature. It is formed by the united action of a direct and an alternating current, with the direct current very much larger than the alternating.

Editor SOUND WAVES: Can a telegraph operator read a telegraph message which is induced from the telegraph line onto a telephone line? If the telephone line ran beside the telegraph line for a few miles, and the operator were to listen on the former at one of the telephones, could he understand the ticks?

No, he could not. The ability of a telegraph operator to read Morse is dependent on the different sounds made by the lever of the sounder on the down and up strokes. The down stroke is firm and decisive. The up stroke is more metallic and has more or less of a ring to it. When the key of a telegraph line is open, the line is not charged. The wire is at practically the same potential as the earth. When the key is closed the line is quickly charged, causing the voltage to rise. This rise in voltage charges the parallel telephone line oppositely, which causes a momentary rush of current from the line into the earth. This rush of current quickly dies out. But during its passage it caused the diaphragm of the telephone receiver to deflect in and out again very quickly, making the click. After the disturbance has passed the diaphragm is again at rest the same as it was before. If the telegraph key is now opened the line voltage is removed, causing current to surge from earth into the telephone line, the reverse of what it did before. This reverse flow causes another click in the telephone receiver just like the first click, and dies away. So the two clicks being exactly alike, the telegraph operator cannot distinguish between them. Not being able to tell down stroke from up stroke, he cannot read the message. This has been tried by operators, who found that they could not make out anything.

Editor SOUND WAVES: How can I straighten a bent receiver diaphragm. I have tried hammering on a smooth surface, doing it carefully so as not to dent the iron, but still the receiver will not come up strongly.

New receiver diaphragms are too cheap for a person to spend much time in trying to straighten one out. Moreover, it is almost a physical impossibility to take the buckle or bend out of one by any process, even pressure in a hydraulic press. Receiver diaphragms should be handled with care, for they are very sensitive to bad treatment. Once damaged there is no cure for them. Keep a suitable supply of good ones on hand.

Editor SOUND WAVES: I have a Kellogg magneto desk set which I wish to use on a common battery exchange. I want to wire it up on the Stromberg-Carlson plan as shown in the sketch which I enclose. I also enclose the wiring of the desk stand as it is now. I have the coil suitable for the common battery work taken from an old instrument. How shall I wire the set so as not to disturb the wires in the base?

In Figure 3 are shown the drawings to which our correspondent refers. *A* is his desk stand, the present wiring being in heavy lines. At *B* is the circuit which he desires to copy. In broken lines attached to *A* are the connections which he should make. The position of the condenser and bell are immaterial, it being only nec-

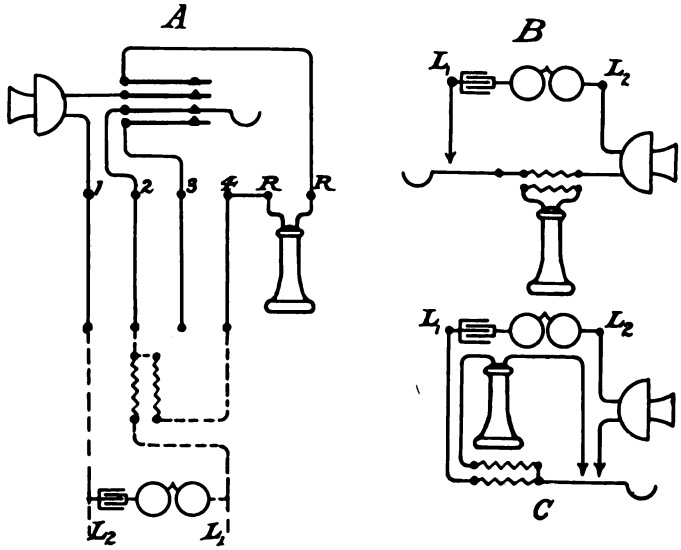

Figure 3.

essary that they be permanently bridged across the line at some suitable point. You will notice that in the proposed scheme at *B* the receiver circuit is entirely in-

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sulated from the transmitter circuit. In applying this scheme to the Kellog desk stand it will be impossible to realize this feature, as the two circuits must occupy the same wire through conductor 2 of the cord. This is more clearly shown at *C* in Figure 3. This will not have any effect on the action of the telephone, except that it will make the receiver more quiet when working the hook up and down to call the attention of the operator. You will notice that when the hook is rising the transmitter spring makes contact first. This allows the battery current to establish itself before the receiver spring touches, so that the first rush cannot induce a current in the secondary circuit. But if the hook be worked too rapidly you may still get a click. If your local battery transmitter does not work well on common battery you may have to exchange it.

Editor SOUND WAVES: We have a small common battery P. B. X. board which has a subscriber line that runs beside a three-phase high tension circuit for four miles. We wish to operate it common battery, but the ground on our central office battery nearly puts the line out of commission. By using central battery of dry cells, we are able to talk reasonably well over the noisy line, as it is then tolerably quiet. Please suggest a remedy.

You should go first over your line in question and see to it that there are no bad joints, leaks, or untransposed portions which might be the cause of the trouble. If the line is all right as far as that can make it you may be obliged to put in a repeating coil and a separate battery to feed this particular line, keeping this special battery of dry cells insulated from the earth. This may be done in the manner shown in Figure 4. In the absence of details as to your switchboard, I am assuming that it is a Western Electric, with the customary line and cut-off relays. This method will require the use of a ring-through repeating coil, as when the operator rings out on the line, the coil must repeat the ringing

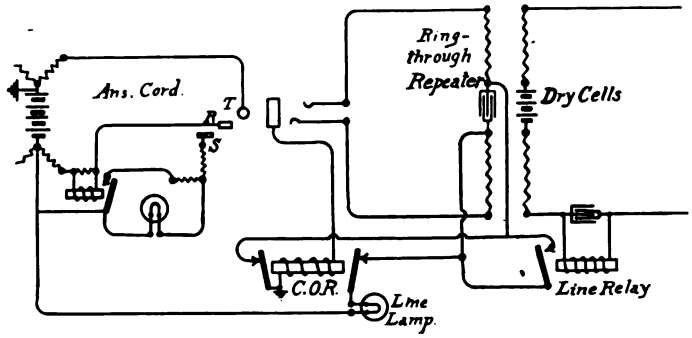

Figure 4.

current. The line relay must be shunted with a condenser to allow the voice current to pass. The operation is as follows: When the subscriber takes the receiver off the hook, current from the dry cells will flow through the line relay, pulling it up. This shorts the connection which lights the line lamp. When the operator plugs in, the cut-off relay is operated as usual, except that in this case it breaks the lamp circuit directly, instead of the line relay. During the conversation the contact on the line relay keeps the circuit through the repeating coil closed, so that the supervisory relay on the cord will be kept energized, shunting out the supervisory lamp. When the conversation is completed, the calling subscriber hangs up, releasing his line relay. This opens the circuit through the repeating coil, which operates the supervisory relay on the cord. When the operator pulls the cord out, the cut-off relay falls back, bringing the line lamp into connection for another call.

The main point of this circuit is that the repeating coil must be one specially designed for ringing as well as talking.

Editor SOUND WAVES: We are about to install an electric light plant in our town, and we want to fix our country lines, which are grounded, so as to keep the induction from the lights off them. If we should run a No. 10 copper line past the extreme end of the light circuit and put in a good ground and then connect all of our grounded circuits coming from that direction on that wire, would it tend to lessen the noise or would it do any good at all?

The amount of noise that you will get from the electric light circuit will depend very much on the character of the lighting current. If it is to be direct current, you will experience little or no trouble, even if the wires are quite close together. If it is alternating current, and the secondary is the only lighting line that runs near your country lines, you may not be bothered much. Low tension alternating current at 110 volts will make a little hum, but not enough under ordinary conditions to warrant special devices to prevent it. But if it is the primary circuit which runs parallel to your lines, with a voltage of from 1,000 to 2,000 volts, you will surely need to do something, especially if it is very close. Putting in the copper wire as you suggest would not do enough good to pay for its cost. While the farmers are talking on the line, not through central, the noise would be about as bad as ever, while if they were talking through a connection to another line, the copper wire would be entirely disconnected, and might as well not be there. This condition is clearly shown in Figure 5. The lines are connected through from tip to

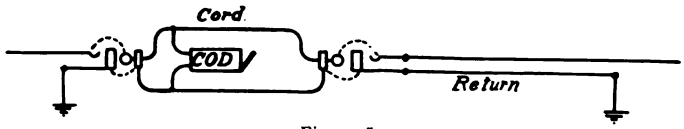

Figure 5.

tip of the cord, while the sleeve side of the cord serves only to ground the clearing out drop, through the two sleeve grounds in the jacks of the lines. If the country lines are not too long, you can with profit make them metallic clear to the end. This would necessitate the use of repeating coils in the switchboard cords when you connect a metallic line to a grounded line. If too long to metallic profitably, the next best step would be to metallic them to the point beyond the electric light line, with a repeating coil to connect each line to the grounded line which goes into the country. These coils must be of the ring-through type. A plan which is not as good, but which will work with fair success, is to run a special common return for these lines to bring back the current from the repeating coils. This is shown in Figure 6. The return must be kept carefully insulated from the

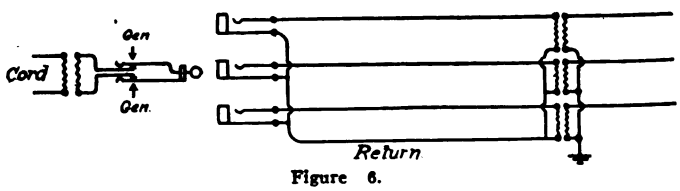

Figure 6.

earth and all other circuits, and should be strung on the same cross arm with the lines which it serves. Better, it should be in the center of them. The return wire will not need to be of copper. A No. 10 BB or EBB iron wire will be as effective as far as the induction from the electric light is concerned. The resistance of the return wire will not perceptibly increase the cross talk between the country lines. But be sure that your joints

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are good. Soldering and taping are none too good. The taping is to prevent corrosion, which may occur where iron has been scraped to solder.

In connecting any of these lines to grounded lines you will need to use a repeating coil in the cord. The repeating coils on the lines must be protected by lightning arresters the same as any other telephone apparatus. This plan of arrangement using a common return for the repeating coils will not probably clear the lines entirely of noise, but ought to reduce it so as to make it unobjectionable. But I strongly advise making the lines metallic clear beyond the disturbing wires.

Second Annual Kentucky Convention

THE Kentucky Independent Association held its second annual convention in Louisville, at the Seelbach Hotel, April 16. Thirty-five operating companies were represented at the meeting, including all of the more important ones. Kentucky is divided into four telephone districts, all of which were generously represented.

The convention was called to order by President M. B. Overly, in the banquet hall of the hotel, which had previously been artistically decorated with mottoes, shields, maps and flags, and in the center of the room a large lantern was displayed with the Independent colors.

Following the president's address the vice-president of each district presented a report showing the conditions of his territory, together with the growth of the telephone systems during the past year. It developed, much to everybody's surprise, that in Kentucky were 41,640 Independent telephones, against 42,052 Bell telephones. When these figures were announced and the fact was pointed out that the two interests were on practically an even footing, even though the cities of Covington and Newport were entirely undeveloped by the Independents, it called forth a round of applause that should have been heard by the co-workers all over the state.

Routine matters filled up the time until noon, but when adjournment was taken for luncheon everything had been cleared away ready for the exchange of experiences and the instructive remarks that were on the program for the afternoon session.

When the convention reassembled at 2 o'clock it was addressed by George S. Shanklin, president of the Fayette Home Telephone Company, of Lexington. He confined his remarks to Independent telephone securities in a way that riveted the attention of every one present. He spoke of the soundness of Independent telephone companies everywhere and the investigations that had been made of such companies by the two telegraph systems of the United States. He prophesied that the day would come when, for economical reasons, the Independent movement would absorb one system, with its thousands of miles of pole lines already in existence, that could be quickly converted into long distance lines. He also called attention to the bogy of deterioration in telephone plants by comparing in detail the deterioration of telephone equipment and the equipment of traction lines. Mr. Shanklin had evidently studied the matter deeply, because he presented facts and figures which showed conclusively that the deterioration in traction properties was nearly twice as great as that of the modern telephone plant.

A recital of conditions in Texas was given by J. L. Nunn, an ex-Kentuckian, now located at Amarillo in the Lone Star State. He referred humorously to their troubles of a technical nature, with which he claimed to be unacquainted personally, but dwelt seriously upon matters of a financial nature which he was experiencing in meeting the tremendous demands for increased service, for the reason that the development was growing away beyond anything he had ever been connected with in a business way.

Various delegates from different parts of Kentucky followed with tales of experiences, crowned universally with success, and showing that the Independent movement was not only strongly entrenched, but a fighting organization of the highest grade.

The fighting side of the telephone movement was graphically given by R. E. Cooper of Hopkinsville, who, with his associates, had just brought to a successful close a struggle with the Cumberland Telephone & Telegraph Company in the adjoining state of Tennessee and primarily in the city of Nashville. When he closed with the modest statement that Tennessee had at last been freed and that the Independents could now build a telephone plant in any town or city in the state the convention went wild.

The enthusiasm reached a climax when W. B. Stanfield of Mayfield told of the battles that had been fought by him and his associates in the Western part of the state against the methods of the opposition, who had resorted to all grades of meanness. When he closed with the statement that in his part of the country they had made the Independent movement a political question and that no candidate for any office had any standing whatever unless he pledged himself as in hearty sympathy with the people's movement for freedom, the applause was without restraint.

The convention was brought to a close in the late afternoon after an election of officers for the ensuing year had taken place, which resulted in the selection of M. B. Overly, Louisville, president; W. G. Turpin, Henderson, secretary, and J. W. Chambers, Winchester, treasurer.

All persons were invited to a banquet to be held in the evening as guests of the Louisville Home Telephone Company and Central Home Telephone Company. When 8 o'clock came around about 150 guests were seated. Toastmaster Donald McDonald, in his happiest vein, called upon various men here and there throughout the banquet room for impromptu remarks, which kept the assemblage in an uproar until about 11 o'clock.

In addition to the delegates from the various companies belonging to the association, representatives of telephone companies located in Alabama, Tennessee, Illinois and Indiana, which are closely connected by business and long distance ties with the Kentucky companies, were on hand. Representatives of associations in other states were present in the persons of Jesse W. Wiek of Indiana and Albert Parlett, president of the Virginia Independent Telephone Association.

About fifteen of the Independent telephone manufacturers sent their officers or general salesmen, who became more thoroughly acquainted with their Kentucky patrons, and participated in the royal hospitalities of Louisville.

At the conclusion of the banquet the opinion was expressed everywhere that the Kentucky Independent Telephone Association meeting was a success from every viewpoint, and that next year a convention would be held that would rival that of the International Independent Telephone Association.

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A Boost for Independents.

Occasionally, outside the Independent telephone press, we encounter an item of merit that has not had its inspiration in the Boston press bureau of the Bell company. In an article entitled "Limiting Opportunity," by James H. Collins, the *Saturday Evening Post,* date of April 20, prints the following:

About 1889 the authorities of New York City chopped down the telephone company's poles to force its wires underground. The telephone company was then regarded as a hideous eight-tentacled octopus. But the total number of telephones in New York City was then only eight thousand. Last October the company put in as many new ones in a single month, and now has nearly four hundred thousand. In 1894 the important Bell telephone patents expired, and this field was thrown open to every one. At that time the number of telephones in the United States was two hundred thousand, or half as many as in New York today. Last year there were more than six million, half under Independent control, and this year two million more will be installed. The industry is growing twenty per cent annually, and represents a gross business approaching two hundred million dollars.

Thirty years ago the young man who intended to stay in his home town usually became a lawyer. Today it would be quite as genteel and a good deal more profitable to become the town telephone magnate. Hundreds of Independent companies have been organized by young men with initiative enough to get the farmers together on a fence wire line. Some young men naturally had more initiative than persistence, however. These probably dropped out, and the fellow who had the most persistence in five or ten townships became the controlling factor in a merger of several neighborhood systems. From that, perhaps, he went on to larger things. Stanley Lichty, of Vinton, Iowa, started in on such a basis. Today he controls a telephone system capitalized at two million dollars. He got this control by having persistence, or "nerve," as they call it in the telephone business.

Growth has only just begun in telephones, they say, and opportunities are better than ever before. As fast as youngsters come out of the technological schools they are grabbed up by the telephone companies, and, as soon as each learns what he can do best and strikes his gait, his salary begins to rise. Very often the young fellow who took an elaborate electrical course finds out in practice that he is happiest when selling telephones. His electrical knowledge makes him none the worse salesman.

As an indication of how the industry is growing, telephone men cite Toledo, Ohio, where, in 1902, the Bell interests had only two thousand telephones to show after twenty-four years' existence. An Independent company got a franchise, but one containing a "joker." Not a new telephone was to be installed, said this "joker," until the Independents could show two thousand subscribers—a seemingly impossible feat. But the new company got that many, and today, after five years, has eleven thousand. The Bell system in Toledo has grown to nine thousand.

Here, too, the manufacturer of supplies of patented appliances has a fair field, for there are several thousand Independent telephone companies to take his output. If a young man went into the business of manufacturing a few good patented telephone devices, and the Bell interests bought all the Independent companies, and brought about such an inconceivable state of affairs as shutting him entirely off from a market in this country, that young man might still, by a little energy abroad, work up a profitable business. In this country eighty-five million people pay for over four and a half billion telephone messages yearly, while Europe, with fully four times as much population, pays for only half as many. A Yankee may yet show Europe how really to get results with the telephone.

Missouri Independent Telephone Convention.

The annual meeting of the Missouri Independent Telephone Association will be held in Kansas City at the Coates House May 8th and 9th.

An invitation has been issued to all Independent telephone men, whether of Missouri or adjoining states, to attend this convention and help make it one of the most profitable ever held, and to encourage the Independent movement. There will be papers by leading men of Missouri and from other parts of the United States, read at the meeting, and special attention will be given to the entertainment of those who attend. One of the features of the entertainment will be a banquet on the night of May 9th.

Illinois Independents to hold Convention.

The third annual convention of the Illinois Independent Telephone Association will be held at the St. Nicholas Hotel, Springfield, Tuesday and Wednesday, May 14 and 15. A cordial invitation to all Independent telephone men in neighboring states has been extended. Delegates chosen to attend the state convention from the Second district are as follows:

L. A. Herrick, G. E. Shoemaker, A. C. Biesemeirs, F. M. Yokum, H. Wales, S. Kennedy, W. P. Landon, G. W. Pitcher, W. H. Glascow, L. S. Bowen, F. Zinnell, Geo. Mallendy, D. Pitcher, E. N. Howell, T. C. Ainsworth, A. G. Hawley, B. F. Swab, and R. N. Gibboney.

Development of a "Rural System."

During the month of March the Elmcreek Telephone Exchange, Elmcreek, Nebraska, was thoroughly reconstructed. Among the improvements, a new 300-line switchboard was installed. The main lead for the system required 35 and 40 foot poles. The accompanying photograph shows the new as well as the old main junction poles.

The New and the Old Junction Poles at Elm Creek.

The central office is now cut in on both copper and iron wire circuits, furnishing toll connections east and west. The entire service, because the system is so largely metallic, is first-class and forms an important link in the Independent connections in western Nebraska, extending into the Black Hills country to the north.

Only a few years ago this was only a little hamlet on the border of the "Great American Desert." No one thought of a telephone system. No one would care to part with the service as it now exists.

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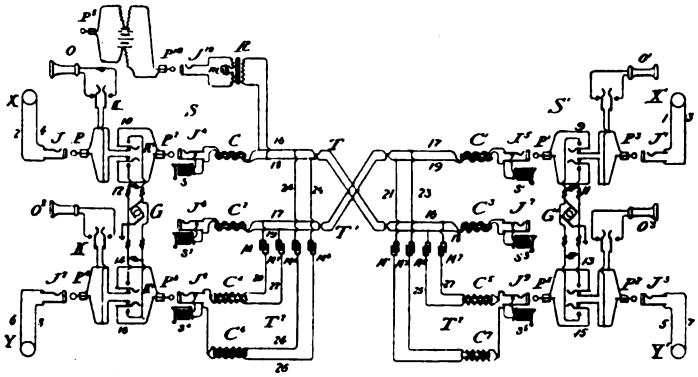
Recent Telephone Patents

By David S. Hulfish

845,796. Multiplex Telephony. Lattig and Goodrum. Filed March, 1904. Two metallic telephone circuits are "phantomed" to produce a third telephone cir-



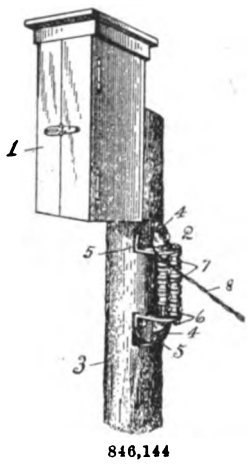
845,796

cuit. The phantoming bridges are of double-wound impedances in series with condensers. (See cut.)

845,848. Hookswitch. Ernest W. Brackett, assignor to the Dean Electric Company. Filed March, 1904. This is a hookswitch for wall sets. The switch is of the self-contained type, the escutcheon plate being integral with the support for the switch springs and hook lever.

846,001. Metal Truss Pole. Louis Blessing, Jackson, Michigan. Filed December, 1905. A tubular metal pole, trussed with wires, and provided at the bottom with short cross tubes to anchor the pole.

846,068. Acousticon. Turner and Johnston, assignors to General Acoustic Company. Filed August, 1905. A prismatic arrangement of a plurality of transmitters.



846,144

846,114. Electrical winding. Lattig and Goodrum. Filed March, 1904. A method of winding double-wound coils to reduce the mutual capacity of the conductors. This is attained by a plurality of windings so connected that points of maximum potential are separated as widely as possible.

846,120. Hookswitch. Ray H. Manson, assignor to Dean Electric Company. Filed March, 1904. A hookswitch for wall sets. The escutcheon is integral with the support for contact springs and pivot. The pivot carries an operating lever for the contact springs, and the hook proper is a manually detachable extension for the operating lever.

846,144. Distribution Rack for Pole Top. William Robinson, Muskegon, Mich., assignor to the W. G. Nagel Electric Company, Toledo, Ohio. Filed May, 1906. A rack of insulators designed to be attached to a pole near a cable terminal, for taking off drop wires bridled into the terminal. (See cut.)

846,327. Callbox for Automatic System. Frank A. Lundquist, Chicago. Filed June, 1904. A substation set for full automatic exchange. The claims are directed for the most part toward the methods for controlling disconnection by the downward motion of the hook.

846,328. Conversation Counter. Frank A. Lundquist, Chicago. Filed October, 1904. A simple type of automatic central office system is shown in connection with the substation equipment. A conversation counter at the calling substation is operated upon the response of the called substation.

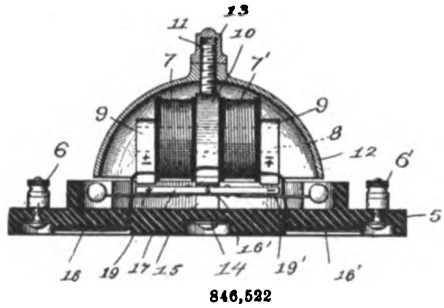
846,368. Telephone Ringer. Klas Weman, Buffalo, N. Y. Filed January, 1906. The novelty lies in the manner of supporting the armature and in the means for its adjustment.

846,381. Telephone System. Clarence A. Anderson, Salina, Kas. Filed January, 1905. A step-by-step lockout party line system. The calling of the central office by any station "locks in" the calling station and operates the line drop to cut off the calling battery from the line to prevent the locking in of any other station.

846,382. Switching Mechanism. Clarence A. Anderson, Salina, Kas. Filed January, 1906. A later design of mechanism is covered for the same purposes as in 846,381, above.

846,394. Telephone System. C. G. and E. J. Burke, Brooklyn, N. Y. Filed October, 1905. A manual system with simple central office circuits. The line lamp serves as a supervisory signal also, the lamp flashing repeatedly as a calling signal and glowing steadily as a clearing signal.

846,413. Telephone System. Isidor Kitsee, Philadelphia, Pa. Filed April, 1904. A one-wire multiple switchboard system. The lines are two-wire (metallic



846,522

circuit) lines passing each through a repeating coil to the one-wire multiple switchboard. Answering jacks are dispensed with and each line terminates directly in a switch plug, the plug having a calling lamp and a clearing lamp.

846,479. Intercommunicating Telephone. Stanislaw A. Koltonski, assignor to Electric Gas Lighting Company, Boston, Mass. Filed December, 1904. A substa-

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tion telephone set for intercommunicating systems, using pushbuttons for selecting the desired station.

846,500. Coin Collector. McBerty and Holmes, assignors to Western Electric Company, Chicago, Ill. Filed December, 1904. An audible signal coin collector, adapted for a plurality of sizes of coins. By the pulling of a handle after a coin is dropped the coin is "calipered" and an appropriate audible signal is sounded, identifying the coin deposited.

846,522. Signal Bell. William T. Thomas, Chicago, Ill. Filed August, 1906. A signal bell of compact and sightly form, and adapted to be rung by alternating currents such as are used in telephone signaling. (See cut.)

846,557. Trunking System. Francis W. Dunbar, assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Filed August, 1902. A two-wire reverse call trunk for trunking between two-wire common battery multiple switchboards.

846,590. Hookswitch. Charles T. Mason, assignor to Sumter Telephone Manufacturing Company, Sumter, S. C. Filed December, 1906. A hookswitch of the self-contained type. The free ends of the switching springs lie adjacent to the pivot of the operating lever, and the hook proper is detachable from the operating lever by means of a screw.

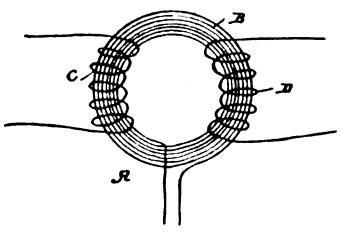
846,604. Telephone Toll Collector. Paul E. Oswald, assignor to Western Electric Company, Chicago. Filed March, 1905. The box is for coins of but one size, and contains mechanism for control of the coin electrically by the operator, either to "cash" or to return it to the subscriber.

846,628. Coin Collecting Apparatus. Edwin H. Smythe, assignor to Western Electric Company, Chicago. Filed December, 1905. The box is for coins of but one size, and contains mechanism for electrical control of the coins by the operator; mechanism is provided also for the control of a deposited coin by the subscriber whereby he may regain the coin under certain conditions.

846,827. Telephone. Samuel H. Couch, Boston, Mass., assignor to Superior Automatic Telephone Company, Boston, Mass. Filed April, 1906. The substation telephone, which is for automatic telephone system, has a calling mechanism, and has a co-operating device associated with the hook lever, whereby the hanging up of the receiver may cause the restoration of the calling mechanism.

846,889. Telephone System. Albert K. Adriano, assignor to Direct-Line General Telephone Company, San Francisco, Cal. Filed March, 1905. An intercommunicating equipment. The selection is by pointer and dial, and a common battery is provided for ringing.

847,008. Converter. Isidor Kitsee, Philadelphia, Pa. Filed June, 1904. This repeating coil has its core



847,008

constructed as a coil, the terminals being made accessible for circuit connections. The relation of the two repeating windings may be varied to some extent by control of the core circuit. (See cut.)

847,197. Relay. Ray H. Manson, assignor to the Dean Electric Company, Elyria, Ohio. Filed May, 1904. The novelty lies in the armature and contact construction. It is designed to be unresponsive to small currents. (See cut.)

847,283. Telephone System. Harold J. Fisher, Hotchkiss, Colo. Filed August, 1906. This is a step-by-step selective party line device. Each station has a

847,197

ratchet operated through the agency of a polarized magnet controlled from the central office.

847,305. Telephone Set. George F. Atwood, assignor to Western Electric Company, Chicago, Ill. Filed March, 1906. A case for holding compactly a microtelephone and the associated substation apparatus. The entire device is compact, and is water-tight when the microtelephone is placed inside and the door closed.

847,316. Telephone System. Charles L. and T. P. Carr, Yellow Springs, Ohio. Filed October, 1904. A selective lockout party line system having step-by-step devices at the substations and controlling devices at the central office.

847,355. Automatic Calling Apparatus. August A. Monson, Minneapolis, Minn. Filed March, 1906. The substation equipment covered by this patent has an impulse sending device as a part thereof, and circuit breaking devices operated by the depression of the receiver hook.

847,356. Automatic Telephone Switchboard. August A. Monson, Minneapolis, Minn. Filed April, 1906. The automatic switchboard of this patent is designed to be operated in connection with the substation equipment of 847,355. The two patents together cover a complete automatic telephone exchange.

847,367. Hookswitch. Frank M. Potter, Jr., Rome, N. Y. Filed May, 1906. An electrical switch is operated by a rocking rod. The hook lever may be changed to either side of the telephone box, the action of the rod remaining the same.

847,372. Lightning Arrester. Charles A. Rolfe, assignor to Rolfe Electric Company, Rochester, N. Y. Filed February, 1903. A carbon arrester is shown. The claims are based on the separating medium used between the carbon blocks, which is described as "material having the property of being a non-conductor when cold and a conductor when warmed or heated, whereby when an arc passes between the electrodes, said material becomes a conductor, and when such arc desists the same becomes a non-conductor."

847,385. Trunking System. Harry G. Webster, assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Filed August, 1902. A two-wire reverse call trunk between two-wire common battery switchboards.

847,449. Transmitter Front. Alfred H. Weiss, assignor to Kellogg Switchboard and Supply Co., Chicago. Filed January, 1907. A transmitter front has an integral fold forming a double portion, and has threads upon the inner surface of said double portion for receiving the mouthpiece.

847,461. Telephone Meter. Charles T. Bradshaw, Philadelphia, Pa. Filed September, 1904. This substation conversation register comprises counting dials, an electromagnet for operating them, and a gong which is

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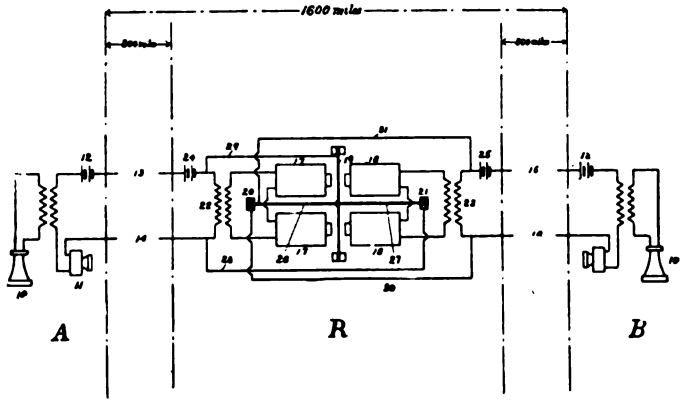
rung by the electromagnet operating the counting dials. The electromagnet is controlled by the operator at the central office, who hears the gong and thus knows that proper registration has been effected. Locking means is provided that the register may not be improperly operated when the receiver is on the hook.

847,555. Adjusting Device for Relays. Edward B. Craft, assignor to Western Electric Company, Chicago, Ill. Filed February, 1906. Claims are drawn to cover the combination of an armature, a pliable tongue having one end rigidly secured, and a spring connecting the tongue with the armature whereby the tongue may be bent to vary the retractive force of the spring upon the armature.

847,656. Telephone Repeater. Dilpert S. Dickert, Salt Lake City, Utah. Filed May, 1906. The repeating

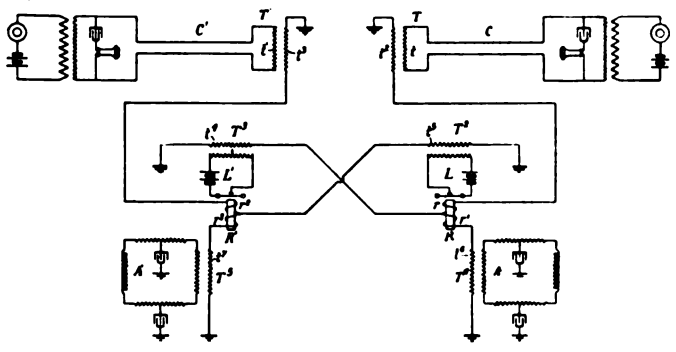


847,656

device of this patent has but one diaphragm, although that diaphragm is acted upon by two receiving helices and in turn acts upon two variable resistance cells. (See cut.)

847,691. Telephone Attachment. Alcorn Rector, New York. Filed November, 1906. The inventor provides an acoustic tube from the telephone receiver to an auxiliary device, whereby both ears may be used to gather the sound of the incoming transmission.

847,777. Telephone Repeater. Fernand Emile de Faucheux d'Humy, Englewood, N. J. Filed June, 1906. The original Morse duplex is applied here to a repeater



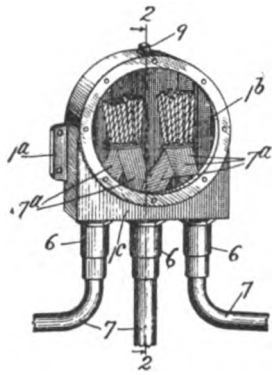
847,777

circuit, the receiving helix being differential and the lines being localized by repeating coils before being balanced by the artificial lines. (See cut.)

847,842. Receiver. Louis Steinberger, New York City. Filed August, 1904. A solid cast receiver with insulated protecting metal shell.

847,984. Trunking System. Francis W. Dunbar, assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Filed August, 1902. Another variation of two-wire reverse call trunk between two-wire common battery multiple switchboards.

847,047. Cable Splicing and Distributing Box. Henry E. Procunier, Oak Park, Illinois. Filed February,



848,047

1905. We show a cut of this splicing and distributing box; the open face is tightly sealed after the splice is completed.

848,073. Receiver. Kelley M. Turner, New York. Filed January, 1906. A damping pad is provided, with means for pressing the pad into contact with the diaphragm.

848,116. Booth. Benjamin F. Merritt, assignor to New York (Bell) Telephone Company. Filed July, 1906. Novelty lies in means for controlling the door.

848,120. Trunking Device. August A. Monson, St. Paul, Minn. Filed November, 1906. A trunking system for a branch central station in a manual exchange. By this means a limited number of lines may serve an outlying group of subscribers.

848,283. Switching Device. Jules A. Birsfield, assignor to Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y. Filed February, 1905. An operator's listening key and a number of selective ringing keys are mounted upon a single base, and means is provided for restoring the listening key when any ringing key is operated.

848,378. Telephone Coin Collector. Thaddeus R. Laing, assignor to Kraft Combination Telephone Company, Chicago. Filed January, 1902. The coin collector is for a single size of coin, and returns the coin upon the downward movement of the switchhook. The operator may cash the coin at any time during conversation, but if not cashed it is automatically returned to the subscriber.

848,398. Selector. John G. Roberts, assignor to Western Electric Company, Chicago. Filed June, 1906. This patent shows a specific form of automatic selector element for line or trunk selection.

848,448. Telephone Coin Collector. W. W. Dean, assignor to Western Electric Company, Chicago. Filed January, 1902. The details refer to a type of coin collector now superseded. The deposited coin is electrically under the operator's control.

848,568. Telephone Detector. Arnold R. Piehn, Alta Vista, Iowa. Filed March, 1906. A circuit making and breaking means arranged in a talking circuit and serving to signal the number of a station breaking in to the receivers of connected subscribers. The object is to sound the knell of the party line rubber neck, and the means is ingenious.

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Province of Manitoba*

Bulletin No. 7

SASKATCHEWAN is considering the advisability of establishing a government owned system of telephones; and Alberta is busily engaged in building such a system. The new provinces have this great advantage over Manitoba, that in establishing such a system they will not have to compete with a strongly entrenched, well developed system under private ownership. Telephoning is in its infancy in the new provinces; and the provincial governments will save themselves future trouble if they prosecute with diligence the establishment of government owned telephones. The telephone ultimately will be owned by the people. In the newer communities a right start can be made; in the older provinces there are conditions which make much more difficult the establishment of a system of publicly owned telephones, though the desire of the people will doubtless ultimately prevail.

In the discussion in the Saskatchewan legislature Mr. Haultain argued very strongly that a government could administer a telephone system as cheaply as a private company. Theoretically a government should be able to build and operate cheaper than a private company; but the practice is not likely to vindicate the theory unless the legislature protect the service, as far as possible, from the inroads of politics. In Saskatchewan, for instance, unless the building and operation of the government system of telephones is placed in the charge of a competent commission, free from political manipulation, it is highly doubtful if the administration will be either economical or efficient. The present idea appears to be to have it administered directly by a minister, which means that the system is to become one more wheel in the political machine. This gives little assurance of such a service as will give the provincial system control of the telephone business of the province.

Municipal Telephones for Alberta.

The strong man of the Rutherford government is Hon. William H. Cushing, minister of public works and member for Calgary. During the past few weeks he has carried off the honors for introducing the most progressive legislation that stands to the credit of the government. This is his telephone bill. His policy is to own and operate municipal exchanges when desired of the municipality and to construct, own and operate rural telephones. "Good telephones at low rates placed within easy reach of every class of household" is his aim. The contract is a large one for a new province to undertake. Manitoba will spend six million dollars in putting into force the telephone policy of the Roblin government. The Bell Company has a not very extensive system in the province, embracing a trunk line from Edmonton to Calgary, and on to MacLeod, and local exchanges, the largest being Calgary. The company claims to have one million dollars invested in Alberta. For the government to make a start in carrying out their large policy would require an expenditure, some of the politicians estimate, of ten millions, and after that the farmers' lines would have to be promoted. It is a big scheme and it will take a big captain of industry like Mr. Cushing to carry it to anything like a successful issue.

At the luncheon of the Calgary Canadian Club Hon. W. J. H. Cushing was the speaker on the subject of "The Telephone Systems of Alberta." After remarks of a congratulatory nature Mr. Cushing said in part:

As to the subject—the telephone systems of Alberta—I may say that the program has not been entirely worked out yet. The policy is, as I intimated in the house recently, to own and operate a complete trunk line or long distance system for the province, to allow cities, towns and villages to own and operate their own systems if they desire to do so or if they wished it, the government to put in the exchange and operate it for them; also to give rural districts the benefit of telephone service.

The government system will connect every portion of this province. It will make connection with the coal mining towns in the Pass as well as the grain growing centers of the north and south. The residents of Cardston, in a very short time, will be able to converse with Edmonton, Athabasca Landing and Peace River. At present the telephone only gives Cardston connection with Lethbridge, forty miles distant. In a very short time the government system will unite this whole province with cords of copper, and it will bring the people of all parts of Alberta in closer touch with each other.

The people of the province will be shareholders in the telephone system and the dividends paid to them will be in the shape of reduced rates. All we want the people to do is to pay the actual operating expenses and a small amount for depreciation of plant. Private companies, as you know, not only have actual expenses to be met, but big dividends have to be paid to shareholders.

I believe I can promise for government ownership that it will insure a square deal for those employed in its telephone service. The charge is often made by our labor friends that workmen suffer at the hands of corporations in order that big dividends may be declared. In many cases I presume this is true. We believe we can make the government telephone a profitable investment, even though we give the people cheap telephones and pay our employes a fair wage.

Corporations have been slow in the past to do anything to provide rural districts with a telephone service owing to the fact that it is difficult to make dividends on this kind of service. The government system will not only reach all the cities, towns and villages, but it will be placed at the doors of the farmers, and they will be able to secure this great convenience at the smallest possible cost. That fact alone will, I believe, repay us for our investment.

The very fact that Alberta is the only western province with government telephones in operation will attract the most desirable class of settlers to our country. Our neighbors to the south possess the rural telephones. In many states the farmers have organized telephone companies and today it is a common thing to find nearly every farm in some counties possessing telephone communications.

Now it is hardly necessary to remark that when these enterprising farmers learn that Alberta is installing a system of telephones that will serve the rural sections they will be more anxious to come here than ever. The telephone which has been such a convenience to them in the old home will be accessible for the new. I know nothing that will be a better advertisement for Alberta than this very thing. Rural telephones are going to make our farmers more contented with rural life and it will bring them into closer touch with the world and its doings. It will make them feel that they are just as able to possess the conveniences of life as the city man. Nothing is more desirable than to make this great class of people who are the mainstay of the provinces contented and happy and I maintain that the telephone will do a lot toward that end.

The government line between Banff and Calgary has now been completed, although it is not in operation. It is the intention to commence operation at four points immediately—a line from the Crow's Nest Pass to Calgary, one from Edmonton to Lloydminster and one each out of Lacombe to Stettler and Wetaskiwin along that branch to the east. A new line also will shortly be built from Calgary to Edmonton.

Mr. Cushing stated that the Bell Telephone Company is aware that the government is willing to purchase its lines at valuation, and up to the present the company has not done anything in that direction. He said that if the company in question did not propose to deal it was the intention of the Alberta government to go into competition with the Bell Telephone Company.

*Persons interested in the telephone situation in the Province of Manitoba should address Mr. F. Dagger, Provincial Telephone Expert, Parliament building, Winnipeg, Manitoba.

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Modern System to be Erected at Brandon.

A meeting of the Brandon city council was held for the purpose of hearing Hon. J. H. Howden explain the position of the government with regard to the building of the new telephone system.

Mr. Howden said the government was of the opinion that a local exchange must be built in Brandon in order to connect up the local municipalities, and if the city did not wish to undertake this construction as a municipal work, then the government would step in and build the system. There was some objection offered to a dual system of telephones, and having another set of poles and wires throughout the city streets, but Mr. Howden promised that in the business districts the wires would be placed under ground; that the system would be up-to-date in every respect; and that the prices charged to subscribers would be much lower than those charged by the Bell monopoly, as the government was not going into the business to make big profits but would simply charge sufficient for the sinking fund and maintenance.

The council, after listening to Mr. Howden, decided that it was not in a position financially to undertake the work, and decided to ask the government to do so.

The following resolution was then passed:

"That the provincial government be and is hereby requested to construct and maintain a telephone system in the city of Brandon in conjunction with its proposed provincial system, and that construction be proceeded with at as early a date as possible."

Telephone Staff Being Organized.

The creation of the new ministry of telephones and railways will necessitate provision being made in the government buildings for the accommodation of his staff. Mr. Howden will be located on the top floor, and it is understood that an elevator will be constructed to obviate the weary climb up the staircase.

F. Dagger, the telephone expert, is getting things ready for the reception of his new chief, and for the speedy commencement of work, when it shall have been decided what the first steps will be in carrying out the government's proposals.

A telephone engineer from Minneapolis, named Middleton, is now assisting Mr. Dagger. What the initial construction will be is not yet disclosed. It will probably not be definitely settled until Mr. Howden returns from his reappearance before his constituents.

The increase in the scope of the government s operations is raising the question of the erection of new premises more worthy of the importance of the province. It is not at all improbable that some decision may be arrived at this year. It has been suggested that the present establishment should be retained for offices and a new legislative chamber erected on the site of Government House. The subject has not got beyond the airy realms of conjecture, but the rapid advance of the country may bring it into the sphere of practical projects by the next session of the legislature.

Telephone and Telegraph.

The telegraph department of the Canadian Pacific Railway Company has recently established a telephone circuit in connection with its telegraph service. Two duplex circuits are being operated between Montreal and Winnipeg, on 210-pound copper wires, with repeaters at Fort William. These two wires are transposed every half mile, and a telephone circuit is being worked between Montreal and North Bay on the same two wires. The telephone circuit was thrown into service December 11, 1906, and has been found to work exceedingly well, being almost as silent as the regular city telephone circuits. The distances are: Montreal to North Bay, 360 miles; North Bay to Fort William, 635 miles; Fort William to Winnipeg, 427 miles—total, 1,422 miles. Voltage used for duplexes at Fort William and Montreal is 200. This is said to be the first instance where a telephone circuit is worked on two duplex wires with one of the telephone offices located at a point where there are no telegraph repeaters. Mr. James Kent, of the Canadian Pacific telegraph department, who furnishes the above valuable information, states that the department contemplates making further additions to the telephone circuits on the wires mentioned.

Civic Telephones for Calgary.

At a meeting of the council a report was read from a special committee appointed to inquire into the question of the city installing a municipal telephone system. The report of the committee was favorable to the move, and it recommended the raising of $120,000 for this purpose. A bylaw will be submitted to the people in due course, and if it is favored the city will then be in a position to go ahead with the installation of an Independent system. As yet there has been no negotiations between the city and the Bell Company, but if the monopolists want to sell out at a reasonable figure an offer might be entertained. The action of the committee was taken because of the unsatisfactory service at high prices of the Bell. The rates proposed to be charged by the municipal system is $18 for domestic and $28 for business telephones, 1,500 of which will be estimated.

Bell Monopoly Changes Attitude at Elgin.

There is a good deal of speculation at Elgin regarding the attitude taken by the Bell Telephone Company. It is not now encouraging the signing of contracts by farmers, but is rather encouraging the farmers to equip their own lines. It offers to build lines for them and give them local and long distance connections for a stated sum.

It is generally conceded that it is taking this stand on account of the decisive action taken by the government in regard to the municipal owned systems. The Bell Company is apparently afraid of government competition. Last year it secured all the contracts from farmers that it could, and showed that it then wished to be understood it was the farmers' friend for the first time in years. But now the company does not seem to want to invest any more capital in the country than it can help.

Public Telephones at Virden.

F. Dagger recently visited Virden for the purpose of conferring with the town council regarding the establishing of a municipal telephone system. As a result of the meeting the council passed a resolution to canvass the town at once to solicit subscribers, the rates not to exceed for residences $15, for business $20. When the canvass is complete estimates will be prepared showing cost of installation and operating expenses. The rural telephones in Virden district, which will be installed by the Wallace municipality, will be connected with the Virden exchange. The rates proposed will enable the Virden subscribers to communicate throughout the whole municipality without extra cost, thereby enhancing the value of the system to the subscribers. Already Wallace council district has signed contracts for 300 subscribers.

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Independents in Favor.

Dr. J. F. Demers, of Levis, will call his company, which is in competition with the Bell in Quebec, the National Telephone Company. It will have a capital of $5,000,000 stock and $5,000,000 bonds. The Quebec legislature has passed its incorporation. The company has been given large powers of expropriation, and it can expropriate for its work in any city in the province. The great favor shown the company has been due to the fair treatment meted out to the public by Dr. Demers' company in the past.

State Owned Telephones.

The Union of Municipalities of New Brunswick has made formal demand upon the government to secure control of telephone lines of the province, and to carry on business as a government owned utility.

Premier Pugsley has promised that when the time is ripe the government will consider such a move, but just now he feels that public interests will be guarded sufficiently by the introduction of the proposed bill to place the regulation of the telephone lines in the province in the hands of the governor-in-council.

Medicine Hat Telephones.

The Medicine Hat city council unanimously decided at its last meeting to ask the property owners for authority to issue debentures in connection with the installation of a municipal telephone system. A resolution was also passed asking the Bell Telephone Company to put a price on its plant, it being considered preferable to buy the company out rather than put in an opposition system, providing the figure asked is within reason.

Canadians to Honor Bell

A delegation from Brantford, Ont., has asked the Ottawa government for $10,000 for the Alexander Graham Bell memorial in that city, which is to cost $40,000. Premier Laurier informed them that he personally was in favor of honoring the inventor of the telephone and would bring the matter before his colleagues.

Canadian Notes.

Caledonia, Ont.—The village council has granted a franchise to the Caledonia Telephone Company.

Vandorf, Ont.—The Vandorf Telephone Company has been incorporated with a capital stock of $10,000.

Burgessville, Ont.—The Burgess Telephone Company proposes to start building its line to Otterville at once.

Rainy River, Ont.—The Rainy River International Telephone Company will shortly extend its lines to Fort Frances.

Miniota, Man.—The Miniota council is considering the advisability of establishing a municipal telephone system.

Nipissing, Ont.—The Nipissing Telephone Company, Limited, has increased its capital stock from $5,000 to $50,000.

Calgary, Alberta.—Calgary will put in a municipal telephone system at a cost of $125,000, with 4,800 telephones from the outset.

Edmonton, Alberta.—The city has sold the telephone exchange at Fort Saskatchewan to the provincial government for $1,100.

Cold Springs, Ont.—The Hamilton Rural Telephone Company, Limited, has been incorporated, with a capital stock of $10,000.

Montreal, Que.—The dominion government will install a telephone system along the St. Lawrence River, at a cost of $18,000.

Port Hope, Ont.—G. W. Jones, of the Port Hope Telephone Company, reports excellent progress in the installation of the company's system.

Markham, Ont.—The Markham & Pickering Telephone Company is about to put in central energy equipment at the main office in this city.

St. Etienne de la Malbaie, Que.—La Compagnie de Telephone de Charlevoix et de Saguenay has been incorporated with a capital stock of $40,000.

Vegreville, Alberta.—The Vegreville & Northern Telephone Company has been in corporated for the purpose of constructing an Independent telephone system.

Larmont, Alberta.—The Larmont Telephone Company has extended its line to Star, where it connects with the government line. Other extensions are also being made.

Bracebridge, Ont.—The Bracebridge & Muskoka Lakes Telephone Company, Limited, has been incorporated with a capital stock of $10,000.

Winnipeg, Man.—Premier Roblin of Manitoba announces that the province will expend about $10,000,000 in the establishment of a municipal telephone system.

Charlottestown, P. E. I.—A company is being organized comprising business men of this province and Halifax to establish interprovincial telephone communication by laying a cable under the Straits of Northumberland.

Macleod, Alberta.—The Macleod Telephone Company will shortly put up new poles, lay new cables and make several other improvements in readiness for the long-distance lines now under construction by the Alberta government.

Quebec, P. Q.—The National Telephone Company, with a capital of $5,000,000 stock and $5,000,000 bonds, has been incorporated. The company has been given the power to expropriate for their work in any city in the province.

Fredericton, N. B.—The Union of Municipalities of New Brunswick has made formal demand upon the government to secure control of the telephone lines of the province and to carry on business as a government owned utility.

St. Thomas, Ont.—The Houghton & Bayham Telephone Company, operating near St. Thomas, Ont., will build a line from Frogmore to Straffordsville, by way of Kinglake and Guysboro. James Boyd of Houghton is president of the company.

Winnipeg, Man.—Wallace and Miniota are the first municipalities to take the initial steps toward installing government telephones. A canvass for subscribers is being made in both on a rental basis not to exceed $15 per annum for the rural telephones.

Crystal City, Man.—It is reported that the Bell company has offered for sale its system in this city to the Louis Telephone Company. The outcome of the rivalry in Louise between the local company and the Bell is being watched with considerable interest by telephone users throughout the province.

Fredericton, N. B.—The New Brunswick Telephone Company's bill, which asks authority to complete a merger with the Central Telephone Company, by increasing the capital stock from $1,600,000 to $2,000,000, was strongly opposed by the New Brunswick Union municipalities when it came up before the corporation committee of the legislature.

Telephones In the Far East.

Consul General D. F. Wilber reports that only one company is engaged in furnishing Singapore with telephones, and it has about 1,500. In Penang and in the Federated Malay States the government operates the systems. The instrument used is the magneto, made in Antwerp, Belgium. Of these, Penang has 500 and the Federated Malay States 300. Singapore buys about 250 telephones annually, Penang 75, and the Federated Malay States 50. Thus far the service in Singapore has been very unsatisfactory. Quite a large sum of money is being expended in improvements, placing wires under ground, etc.

Independent Growth in Indiana.

As evidence of the fact that great progress was made in telephony in Indiana during the last year, statistics recently completed show that there are 186,226 Independent and 64,229 Bell telephones in use in the state, exclusive of a number operated by small companies that made no report.

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Current Convention Papers*

CHANGED CONDITIONS.

THE philanthropist who is said to have offered a large reward for a "satisfied man, and who was enabled to retain his reward because no man who applied could prove that he was satisfied, certainly did not have an applicant for the money a certain Irish friend of mine, who, when in conversation with another Celt, fell into a discussion of the words "satisfied" and "contented." One of them contended that a satisfied man was a contented man, but the other immediately took issue with him, and when required to prove his claim said: "Well, here 'tis, I'm satisfied that Casey is flirtin' wid me woife, but, begorry, I'm not continted."

Now, dissatisfaction and discontent have been, through all time, the forerunners of that which is assigned me as a subject today, "changed conditions." To them can be directly ascribed the Boston tea party, the first shot upon Fort Sumpter, the rise of every great reform and the elevation of every man and thing above their environment, and they have been followed by the birth of a republic, a reconstruction of it, a great religion and an Independent telephone system, and well we know that the latter is no longer a theory, if you please, but a changed condition, an outgrowth of a discontent with poor service and dissatisfaction with exorbitant rates, and the failure of our competitor to have his ear to the ground when the people spoke. A young, strenuous development, able now to look its enemies in the face and keep attending to its own business and making a success of it.

I think your honored president had designs in inflicting me upon you with such a subject, because he knows of my own recent change of condition, for, as an Independent telephone man, I am only nine months old. I began my telephonic managerial experience in 1888, with the Bell company in a town of 4,000 population, and my first exchange had just 29 subscribers (not counting extensions, as is present Bell practice). The rates were $48 per year for business and $36 per year for residence within one-fourth mile of the central office, and, although we had party lines, they were not operated on the give and take principle as now—the company saving its cable and pole line and switchboard space and granting the subscriber a better rate because of the character of the service—not on your transmitter—they charged you more the farther you were away, and I had one subscriber who paid $9 per month. But conditions have changed!

Those were the days of the Blake transmitter, which worked so well that when this subscriber of mine, whose office was just across the street, talked to his $9 per month telephone at his coal mine, he might just as well have stuck his head out of the window and conversed with the wide, wide world, and his conversation was almost a disturbance to the neighborhood, it was necessary to talk so loud. But conditions have changed, and he now talks with his people over long distance transmitters, and transmitters, thank goodness, good transmitters, made west of the Hudson river. Those were the days when a manager did not dare to order a new set of instruments until he had a contract signed up, binding the prospective subscriber down hand and foot, lest he change his mind, refused to take the instrument and the poor, struggling licensee company have to pay the royalty anyhow, at least until the instrument could be sent back to Milk street. How significant the name, Milk street! But even such conditions have changed, and we install telephones which the people willingly pay spot cash for, while our calamity howling friend begs a trial of his service absolutely free, and with poor success at that. There was no competition in those days, but conditions changed.

I shall not soon forget my first wrestle with competition. I had an exchange now of 76 subscribers in a town of 8,000 people. The solicitor for the opposition proved to be a man whom I had known for years, and in whom I had never seen any harm, but when he went upon the streets with his list, I looked upon him in my young experience as a living example of man's perfidy. His good traits became jokes and the flow of my milk of human kindness toward him dwindled from a gallon an hour to a pint a month. He did not get his franchise, rather through his failure to raise the necessary wind than through my efforts, but the first thing I knew I had 83 subscribers, and then I had 90, and then I had 125, and then 176. Conditions have changed, and he, even then a despised Independent telephone agitator, had changed them.

These changed conditions brought changed positions to me. Competition came in and I grew strong in argument against the double telephone nuisance, the useless waste of money, the economic mistake, the step backward in telephone practice, which was embodied in the competitor, enlarged upon his lack of knowledge, and of money and men, and I came to this city (Columbus) and here in my office one day, as I conversed with a prominent man and pointed out the misfortunte of double telephone service, I bumped my head in such a manner as to remind me for all time of changed conditions, and this is the point in which you will be most interested, I know.

In the midst of a statement that it was financial foolishness and telephonic folly to keep two telephones, he stopped me and said: "How many telephone have you in Columbus?" I answered: "Nine thousand." "How many has the Independent telephone company in Columbus?" said he, and I answered, "Approximately, 9,000." "How many are duplicates?" he asked, "that is, how many keep both?" I answered, "About 2,000."

"Can it be possible, then," said he, "that you each serve me with exclusive connection with 7,000 business houses and families?" I said, "Yes." "And, is it not true," said he, "that I should be able to reach with greater ease the 2,000 business houses and families which have both telephones?" Again I answered truthfully, "Yes." "Then," said he, "I am actually getting for the money I pay in connection with 18,000 telephones in all, or 16,000, not counting the duplication. Now," he contined, "let's see—I pay your company $60 per year and I pay the Citizens' company $40 per year, which makes $100 per year, or a little more than 5½ mills per telephone per year. Now, before the Citizens' company started I paid the Bell company $72 for a Blake transmitter with a noisy circuit, received connection with, as nearly as I can remember, from 1,200 to 1,800 telephones. Then the long distance transmitter came in and I paid $96 per year for a long distance equipment and a metallic circuit, and was given connection with from 1,800 to 4,000 subscribers, or at the rate of 2 4-10 cents per telephone per year. Now, unless I am badly off in my figures, I seem to be getting for $4 per year more than I formerly paid, not only connection with the 4,000 whom I already reached, but 10,000 on top of them."

And then he complimented my zeal for my company, just to round off the rough edge of his point, and said: "Now, young man, I buy my telephone service just on the same principle as I do any other commodity, either where I get the best grade or the most for the money. A telephone is the more valuable the more people I reach with it, and if you cannot produce figures to disprove what I have said, as to conditions here in Columbus, you will fail in your attack on the other fellow, and you had just better give good service and let him alone," and with the added remark that "telephone subscribers, as a rule, expect too much for what they pay," he went away.

But the changed conditions remain, and what is true of Columbus is true of every other town where the Independent company has come to the rescue of the people, and Cincinnati's business men are beginning to realize that they have been buncoed too long. Cincinnati, thinking herself alive, is telephonically ten years behind her sister cities, and, at a conservative estimate, is losing the appalling sum of $10,000,000 yearly in trade, and millions more in excessive telephone charges, and, unless she gets right on the telephone question, along with Omaha, Denver, Chicago, Milwaukee, Cleveland, Pittsburg, St. Louis, Buffalo, Philadelphia, and even Boston—unless she recognizes the changed conditions she will be run over in a business way. I wish we could shout it so as to attract even the momentary attention of Cincinnati's business men; that there are 25,000 business men in Ohio, stockholders in Independent telephone companies, who do not buy of Cincinnati anything that can be purchased elsewhere; that 25,000 business men do this because of the fact that Cincinnati has, so far, failed to recognize, with franchise rights, an Independent telephone company; that there are 300,000 subscribers for Independent telephones in Ohio alone in whose face Cincinnati's telephone door is shut.

*Secretaries of the various State associations are invited to send all papers bearing on the Independent telephone situation, no matter what the subject may be, direct to the publisher of this magazine. Co-operation of this kind will have a lasting benefit to the industry we are conscientiously endeavoring to serve.

Mr. Stockholder, stand by your guns; send every traveling man back to Cincinnati empty handed and with the message, "Cincinnati must open her doors to the Independent telephone people." It took Boston nearly ten years to awaken to the fact that a subscriber could keep two telephones and pay for them willingly, and already Cincinnati is beginning to roll in her sleep.

While I am a young man in the Independent field, I have known you, known the weaknesses and mistakes that are always the heritage of beginners. I have recognized the changing conditions, especially the improvement effected by your state organization, and I take this occasion to compliment it, and the officers who have worked so hard to make it what it is. It has gone all over the land and carried its name with it, "The Ohio Idea," and it is covered all over by one word, "co-operation," and one of the really great things about co-operation, too, Brother Independents, is that there need not be in any of our minds, in reference to co-operation, the question which has worried our Bell friends with their securities so much lately, "How much will the people be able to digest?" No, we can't get too much of co-operation. And here let me urge upon each of you that we cannot do well our part without urging upon every Independent company to come into this movement. Its dues are a pittance. Its benefits are beyond measure. Every help it affords a brother, not speaking of its benefits to you, reduces the resistance in your own circuit and you can hear better and be heard plainer.

Conditions have changedd, gentlemen; don't be a bad receiver nor a Blake transmitter in this game. With co-operation as a lever, and the justice of our cause for a fulcrum, we can move the world if we will. Will you help?

The Bell company is still sending out the Boston News Bureau stuff, working the mud slinger over time, but to no purpose. It no longer hires alleged officials of the League of American Municipalities to gather data, and then publishes garbled reports of Independent companies with Bell constructed deductions upon the garbled figures.

Conditions have changed, I say, and the Bell company no longer refers to the experiment at Dayton, and there is a reason.

In its cry that Independents can't give service, and can't be successful, and can't make money, the Bell company is telling us just what that lawyer was who, when called upon to defend a man already in jail, after being told what he had done, said, "Why, man, they can't put you in jail for that," and his client said, "well —— it, what do you think this is, a theory or a condition? Can't you see I'm in jail?"

Gentlemen, that bluffed you once, but conditions have changed. It is not a theory any more, it is a condition. We're doing all these things, and the far cry that we can't is but the echo of a wish that we would not try to. And, now, comes another changed condition, gentlemen. The Bell company, through its sub-licensee department, is fairly beating the bushes in its efforts to connect with Independent companies on a sub-licensee basis. Did you ever stop to think that there must be a very pertinent reason for such condescension on their part? You were too depised to look at a few years back. You were an illegitimacy—your instruments were not good enough—you didn't maintain your lines properly, so they said, and you couldn't and wouldn't hold out long, anyhow. They proceeded to dig your grave for you without even asking your permission.

It is all a matter of changed conditions, gentlemen. You have gotten out of your swaddling clothes. You have handed the lie to illegitimacy. You talk everywhere over your bad lines and poor instruments, and persist in being a good, live corpse. Then, why is it they cater so to you now? There is no philanthropy in it, rest assured. They have found out that they have been hitched up to a faster animal than they reckoned upon, and the sub-licensee scheme is but another cry of "Stop us, we're running away, gol darn our fool souls." They have learned that we are their masters in a fair fight, and they know they cannot break down your business in a straightforward way, because the people are with you. They cannot afford to build your territory, and, more than that, they haven't the money. Therefore, they come in cap and gown and say, "Brother, be good; we need you and you need us. Now, let's get together. You're a good fellow. We've found out that your lines are not so bad and your instruments talk fairly good, and we can give you just the thing you haven't got, connection with so many states and territories. Now the real way to show your Independence is to connect with us, old man. Don't let anyone dictate to you."

And, be it said to their eternal discredit, some Independent companies have sold themselves for such a "mess of pottage." What does all this mean? Simply this, Brother Independent, they are asking you to forsake the very principle that gave you life, to do that which will harpoon your best friend. They say the Independents will never be able to give you good long distance service, and yet, you remember, that ten years ago they insisted that you couldn't operate even a private line successfully, and the fact remains that Independent long distance conversations are possible from this very city to Kansas City on the west, Detroit on the north, Harrisburg and Buffalo on the east and to southern Kentucky on the south, and the only thing which limits us is just the same thing which prevents the Bell company from talking successfully all over this United States. The lines have not been constructed. But, gentlemen, the lines are building; the proposed combination of long distance companies will hunch us both ways, clear beyond the possibility of the claims of our competitors that we can't do it. There is in course of construction now Independent long distance pole lines which will carry heavy copper circuits from Louisville to New Orleans, completed this minute from Nashville, Tenn., to Birmingham, Ala., and which will split the Bell company's solid south from narrative to neck band, and yet they say there never will be an Independent long distance system.

Did you ever stop to think that when the Bell offers you its great long distance service that its advantage is greatly mitigated by the fact that the average mileage of toll line talks is but thirty miles? That where one of your patrons talks once to a point one hundred miles distant, the other one hundred talk three hundred times to points ten miles and less away? And yet, they enlarge upon such an advantage, and they coax and bluff, and for what purpose? Because they love you, because they only want the toll business? Not in a thousand years; they simply want to change conditions and get you to pull their chestnuts out of the fire, and if you do allow them to gull you into that, gentlemen, you are guilty of base ingratitude, to say the least, and the book of the higher law says that ingratitude is the greatest crime on the calendar. Don't do it. If you don't feel equal to your day, if you feel your backbone geeting weak, for goodness' sake, call in your nearest neighbor, Independent, make a reasonable price on your plant and sell out to him. Don't stay in business and stab your friends in the back.

And, closing, let me here express the hope that you may each to be so fortunate, when that last change of condition comes on, as to be able to look back upon a well ordered and successful telephonic career, at least, and hear over celestial wires the welcome words, "Well done."—*Paper read before the Ohio Independent Telephone Association convention by J. H. Ainsworth, Columbus.*

DEVELOPMENT OF LONG DISTANCE BUSINESS.

In presenting this paper I make no claim of originality. I believe the condensation of methods suggested, if carried out, should aid in increasing the revenue from the long distance lines.

I will not dwell on the conditions of the toll equipment, lines, or number of circuits. It is an old adage that "a wise mechanic does the best job possible with the tools in his possession," therefore I take it for granted that a wise traffic manager will try to build up his business to the points he can reach the most satisfactorily without trying to induce subscribers to use lines to points where they will be unable to talk to, because it is very difficult to get business back after it has been lost through poor service.

I find that it is less difficult to advertise new lines from the smaller city, as there are fewer people to reach. When you have a new line in first-class condition, it is well to give free service over it for a few days from the smaller city, because the people will take advantage of it and call up those in the larger city, thereby advertising the fact that there is a new line to talk over. You may have some one calling up to ask about the weather and other unimportant things, but if the connection is satisfactory it will do no harm, as they may say a good word that will be beneficial at some future time.

The next thing to do after free service has ceased is to have one of your pleasant-voiced operators call up each subscriber who may have cause to use the line. She should use good judgment in getting some one in authority to talk to, and be well posted as to what to say, which should be something along this line: "Is this Mr. Jones? This is the long distance department of the Home Telephone Company, and I wish to inform you that our new lines to Blankville have been completed and we can give you first-class connections with all surrounding towns. We shall be pleased to have you try our lines the next time you wish to talk to any one in these localities." This will usually start them asking questions about other points, so the operator will have to be well posted as to all points reached. She should keep a record of all questions of importance asked her, turning them over to her manager. This will

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give very good material for the solicitor to work on later. This method of calling up the subscriber I consider a very beneficial, effective and economical way of advertising.

Now comes the circular letter. This should be typewritten and addressed propertly to each person or firm to whom written. This letter should say what lines have been completed to various points, stating briefly anything of special interest, and should be as short as possible to insure reading.

You should always have something catchy in the way of advertising slips to enclose in each letter mailed by the company, no matter to whom it goes.

The usual newspaper, billboards, street car and advertising of this description may be used at the manager's discretion, as this runs into money fast and will have to be governed by the conditions and the results expected.

The work of the solicitor now follows. In introducing new lines it is well to use the message pass. This to be given out by the solicitor or manager. I think this system of giving free service works more satisfactorily in larger cities than the universal free service mentioned before for smaller cities, as you are enabled to place them where they do the most good, and also to ascertain to whom they converse. The message pass should be worded like the following:

HOME TELEPHONE COMPANY.

MESSAGE PASS NO.....

Good for one three-minute conversation over the lines of this company.
To .....
On or before 190
When presented by .....

HOME TELEPHONE COMPANY,
Per.....

The slips should be in book form, about twenty-five in each book, with stub attached. On the stub should be the number of the pass and "to whom issued." On the reverse side of the slip should be printed: "Give operator pass number when calling. After using return pass to Home Telephone Company to avoid charge being made for the message."

To go with this you should have the test call ticket printed for the toll operator to fill in, and should be as follows:

TEST CALL.

Date .....
Pass No.....

From

Place .....

To

.....

Person .....
Place .....
Time ..... M.....
Answer by "A" Operator.....Sec.
Answer by "L. D." Operator .....Sec.
First Report .....Min.....Sec.
Conversation Est'b.....Min.....Sec.
Remarks .....
Subscriber's Comment .....
Call Made by .....

This slip, or ticket, when filled out, gives the solicitor a record of something to work upon when he returns.

There are many other styles of advertising that are beneficial, but I have not the time to elaborate on each separately.

As you are familiar with the coupon system, I will not discuss that in detail, but will give our system of handling it. The first work for the solicitor to do is to induce the subscriber to use the lines, however little it may be. Keep close record as to the amount they use, and as soon as the amount justifies call and sell him a small coupon book, increasing the size as his business increases.

I have made out monthly a statement covering the amount of toll by subscribers using in excess of one dollar per month. This statement covers six months, always dropping one month as the new month is added. In this way I can tell whether each subscriber's business increases or decreases. This is valuable information as an indication of the size of coupon books they should have.

Careful records should be kept of the amount of traffic over each line outgoing, incoming, through, and the maximum day. These records are of great importance, as they show you whether you are getting the proper amount of business over your circuits, so as to invest the money you have to spend in improvements where it will do the most good. There is one peculiarity about the telephone business, for it will not stand still. It is bound to go ahead or back, so with the best of methods and the best of tools on earth for conducting business there is still one element necessary to insure against your being classed with the "also rans," and that is entirely covered by the one word, "hustle."—*A paper read before the Pennsylvania Independent Telephone Convention at Allentown, by Frank Hart, and not previously published.*

STERILIZATION AND PRESERVATION OF POLES.

In maintaining telephone, telegraph, electric light plants and interurban railway companies, one of the greatest problems that confronts the management is the inevitable depreciation of the outside construction work of their plants. One of the largest items of this depreciation account is that caused by the rotting of their poles.

The importance of this subject will be appreciated when we say that there are 250,000 miles of telegraph pole lines and about 500,000 miles of telephone poles in the United States, making a total of 750,000 miles. It is safe to say that these lines average thirty-seven poles per mile, making 27.750,000 poles used for electric railroads and electric light plants, will make an addition of 5,000,000, or a grand total of 32,750,000 poles. This is in accordance with the government report of 1902. It is estimated that there are over 40,-000,000 poles in use at this time by companies we have mentioned. The value of these poles placed in the ground ready for use will average from $5 to $7 each, or about $200,000,000. This vast amount of property is exposed to the weather and is constantly decaying. This decay goes on day and night and is as certain to cut the pole down as death is certain to overtake man and cut him down.

It seems strange with all the boasted scientific knowledge and great inventive genius of the American people, they continue to allow over $200,000,000 worth of property to remain exposed to the ravages of destroying bacteria and fungi with scarcely an effort to find a remedy. It is evident that if some means can be found to destroy this germ at the soil line, and at the same time protect the pole from the attack of those which remain in the surrounding soil, at a reasonable cost, the great problem of the depreciation of telegraph and telephone poles is solved. If the life of the pole from the surface of the ground up and down a few inches can be prolonged ten or twelve years, it will add millions of dollars to the value of our telephone plants, and the stocks and bonds of all companies that use poles will vastly increase in value.

The average life of a white cedar pole is said to be from twelve to fifteen years. It varies, however, owing to its condition when placed in the ground and the nature of the soil and climate. All poles and posts rot off at or near the soil line. The decayed portion extends a few inches above, and about three or four inches below the soil line, the depth below being governed largely by the nature of the soil. The portion of the pole from the soil line to the top will last many years. Indeed, there is reason to believe that it will last three times as long as the portion that goes into the ground. Again, millions of poles are being used each year to replace the ones that have rotted off. The Bell Company used over 500,000 poles in one year to replace old ones. Vast areas of forest are being denuded of poles each year and they are constantly growing more scarce as well as more expensive. Where the telephone and telegraph companies are going to procure their poles in the next ten or twenty years is indeed a problem worthy of the most careful consideration.

It is a singular fact that it is only of recent years that the true cause of the decay has been discovered, although there have been experiments made for the past forty years to preserve poles.

It would be interesting, if time permitted, to follow the many experiments in Europe and America in this line of investigation. Indeed, our own many failures and successes in the past six or seven years would not be uninteresting. In many ways we have been fortunate. We have had the benefit of the experiments of the most learned scientists that have preceded us in this line of investigation; their mistakes as well as their successes have aided us. There is no lack of literature on the subject of preserving timber, covering the past seventy-five years. Since the germ theory of disease was recognized as true, the subject has engaged the attention of some of the most accomplished bacteriologists and microscopists in this country and in

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Europe. The United States Department of Forestry has in the past two years been experimenting with the co-operation of the Western Union Telegraph Company in the preservation of telegraph poles, and the results of its work have not been made public on account of the time engaged being so short.

The great trouble with most of the work done is the experimenters have been endeavoring to sterilize the pole before placing it in the ground; our endeavor has been to sterilize and protect the poles already in the ground.

It has been proved beyond question that the decay which takes place at or near the soil line of the post or pole is caused primarily by living organisms, namely, bacteria or fungi, and in some rare instances by insects. Bacteria and fungi are both low forms of life which multiply with great rapidity when once they attack a pole, and since their action on the fiber of the wood is practically the same, they will be considered in this paper together. They attack either dead or living timber; but on dead timber they attack the walls of the cells and the result is the familiar decay or rot under consideration.

There are two conditions necessary for the existence and rapid growth of those living germs of destruction. First, there must be a certain amount of dampness or water. Second, there must be a certain amount of heat, and, some scientists claim, a certain amount of oxygen. This contention is shown by the fact that bacteria and fungi do not ordinarily affect the pole more than a few inches below the soil line, unless the soil surrounding is very loose or porous. It has been observed that a line of poles running through a pasture field where there is grass growing will be more quickly attacked than in any other location. Again, a line of poles situated on the north side of a hill will be more quickly attacked than on the south side, provided the soil is loose and porous. A pole under water will not be attacked by fungi and bacteria, neither will it when surrounded by soils containing certain chemicals. A few years ago it was thought by telegraph and telephone companies that if the dirt was heaped up around the pole, thus leaving a certain amount of drainage away from it, no decay would take place at the soil line. Experience has shown that this was a mistake, for the pole was attacked just the same, only a little higher.

It will be observed in passing that the great enemy of the telephone pole is the same that attacks the millions of railroad ties in use. The conditions surrounding a railroad tie are more favorable for the rapid growth of the bacteria and fungi than in the case of a pole. They lie flat on the ground, constantly absorb moisture, and, being exposed to the rays of the sun, have the two necessary conditions for rapid growth. The problem of protecting and sterilizing railroad ties is a much more difficult one that we have to contend with in the case of telephone poles, although it is generally supposed by experimenters that this is not the case.

Realizing the great importance of this subject, we began out experiments in the use of antiseptics six or seven years ago, although some of our experiments in the preservation of posts and poles have extended over a period of nearly twenty years. We directed our attention to poles that were in the ground and that were already infected. We believed if it were possible to save the life of a pole which had already been attacked and was partially rotted off, it would be a comparatively easy task to sterilize and protect a pole which had lately been placed in the ground.

We believe we have found a means to sterilize poles in the ground that is practicable and certain, and that, too, at a cost which is reasonable and much less than the natural depreciation will amount to.

We cannot better explain our process, and at the same time give you the results of our experience, than by relating some particular instances of our experiments. We were very desirous of making a thorough test—one that would conclusively demonstrate the efficiency of the process—and, it having been demonstrated by a long line of experiments that the cause of decay at the ground line was a bacteria or fungus growth induced by a certain amount of moisture and heat from the sun, it was obvious that in order to sterilize and save the life of the pole we must use an antiseptic that would penetrate the pores of the wood. We selected a class of poles that had been in the ground for about eight years and which were thoroughly infected with germs; indeed, some of the poles upon which we experimented were over half rotted through and would not have lasted two years under the most favorable conditions. They were so weak that they would not have survived a severe storm. We dug down around the pole about eighteen inches and with a pointed instrument scraped out and away all the rotted wood. We then applied our antiseptic chemicals in a plastic form. with a trowel, filling all the holes and depressions even with the surface of the pole. We next placed around the pole an especially constructed asbestos jacket that would resist the action of the elements, such as rain, snow, freezing, and thawing, and then filled in between the jacket and the pole the antiseptic material in a powdered form to the top of the jacket. We allowed the top of the jacket, in some instances, to remain open, so that it received all the rain and snow that fell and which might run down the pole. In others we placed a cap over the top of the jacket. We were careful in mixing our antiseptics to use none that would cause the pole to become brittle and thus weaken it. We found that in all instances, after a period of over six years, our antiseptics had completely sterilized the poles where applied, and the decay was entirely arrested. In fact, the poles were in as good condition as when the treatment was first applied. We carried our experiments further and treated a class of poles that had not been in the ground more than two or three years, and where the surface indications showed only slight infection, but the sappy portion had begun to scale and the cracks exhibited unmistakable signs of decay. We did not attempt to clean off the decayed portion of this class of poles, but treated them by placing the jacket around the pole and depositing between it and the jacket our antiseptics and then sealed and fastened the collar above referred to. The jacket on these poles was about eighteen inches wide, extending below the ground about fourteen inches and above the ground about four inches. Upon examination of this class of poles six years after treatment, they were completely sterilized and free from the effects of the bacteria and fungi. No signs of living fungi could be discovered under a powerful microscope.

We are fully aware that the success of this process depends very largely upon the question of expense, and we have made some figures based upon our experiments which show that the cost is within the reach of all companies and can easily be paid out of the depreciation account and still leave a handsome surplus.

Suppose we take a plant of 5,000 poles, costing, in the ground, fully equipped, $5.00 each. Their original cost would be	$25,000
At the end of twelve years they will have to be renewed at a cost of	25,000
Counting interest for twelve years on the last $25,000 equals	18,000
Making a total cost for twenty-four years of	$68,000
Suppose we take the same plant and apply the treatment.	
Original cost of 5,000	$25,000
Cost of sterilizing after they have been in the ground two years, $1.25 each (and it can be done for less)	6.250
Interest on this amount for twenty-two years	8,250
Making a total cost for twenty-four years	$39,500
Cost for twenty-four years without treatment	$68,000
Cost for twenty-four years with treatment	39,500
Profit in favor of treatment	$28,500

It will be observed that if the pole is preserved intact, with full strength, for ten or twelve years, by means of the jacket and chemicals, and it is removed or entirely gone at the end of that time, the pole will be in the same condition to resist the fungi that it was when first treated and will have its original strength and life.

Again in our calculations we have not taken into account the increased amount of trouble that always accompanies the use of old poles the last few years of their lives. This item of the maintenance account always increases as the poles grow older and weaker, and should be placed on the credit side. Then, again, in all human probability, poles will be at least twenty-five per cent higher in value twelve years from this time. If that be the case, the cost of the new poles when they have to be renewed would be $6,250 more, and the interest on this increased amount for twelve years would be $4,500, making $10,750 more to be added to the profits of sterilizing, or a total of $40,375 in twenty-four years.

In all candor, we ask this convention of business men if this is not worth looking after?

At this point we wish to digress for a moment and allude to a condition of things in another branch of economics which will illustrate the present position of telephone and all other companies that use poles.

For hundreds of years there have been vast armies of soldiers raised to battle against each other in every so-called civilized country on the globe. Hundreds of thousands of soldiers have been killed in battle, but millions have died from disease. It has been recognized by the war departments of all nations that for every soldier killed in battle four have died from dis-

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ease. In the Napoleonic wars this was true; in our civil war; in the Franco-Prussian war; in the late Boer war, it was true. In our Spanish war the proportion was much greater, for there were 275 killed in battle and over 3,800 died from disease (nearly 14 to 1), and there are now 60,000 Spanish war veterans on the pension list, mostly from diseases contracted in the war. In all these wars very inadequate measures were adopted to prevent disease, and it was generally supposed by war nations that this appalling death rate from disease was unavoidable.

It remained for the little known and little respected Japanese nation to grapple with and solve the problem. The leading officers and statesmen in Japan saw that if this great death rate could be stopped in their army it would require a less number of soldiers, less transportation for them, less clothing, less food, and a vastly less expense to carry on a war. As one of their eminent physicians expressed it, "Because four soldiers have died of disease to one killed in battle in the past, it is no reason that this terrible loss should continue forever." They enlisted the minds of their most eminent physicians and surgeons and bacteriologists to solve the problem, and the result was that the military and scientific world has been astounded at their success. They have actually reversed the figures, and, in the war just closed, four have been killed in battle to one that has died from disease, and this, too, without reference to the number engaged in battle. The Japanese solved the problem by protecting their soldiers from the germs that caused the disease. Their food, drink and clothing were all sterilized. Every surgical operation was carefully made with reference to protecting the diseased portions from the attacks of germs.

Are not the telegraph and telephone companies following blindly in the steps of the old war nations? They have been taught and led to believe that the life of a pole is about twelve years—they have been taught to believe that the decay at the ground line is inevitable and the time of its usefulness cannot be extended. We have demonstrated that the life of a pole can be nearly, if not quite, doubled, by the use of a simple method of treatment.

I will add that Dr. Howard Jones, my co-worker in these experiments, expects to publish, at no distant day, an account of his studies of the bacteria and fungi which cause the decay of telephone poles and fence posts. The scope and technical character of his experiments makes it impossible to give an account of them in this paper.—*A paper read by H. P. Folsom, before the Ohio Independent Telephone Association.*

Epitome of the Month

PERSONAL.

TACOMA, Wash.—The Northwestern Long Distance Telephone Company has appointed Roscoe Howard, of Tacoma, as its agent in this state.

CUMBERLAND, Ohio.—D. C. Carter, of Cumberland, has purchased, for a consideration of $750, the telephone line running from this place to Spratt.

NEWTON, Iowa.—A. R. Morse, of Des Moines, will fill the position of manager for the Jasper County Telephone Company, from which R. C. Redman lately resigned.

TECUMSEH, Neb.—C. W. Pool has resigned his position as manager of the Johnson County Home Telephone Company to devote his entire time to newspaper work.

NEWTON, Iowa.—R. S. Redman has resigned his position as manager of the Jasper County Telephone Company, to accept a position as general manager of the American Construction Company.

SANDWICH, Ill.—E. E. Wallace was recently elected secretary of the Northern Illinois Telephone Company, of Sandwich, succeeding E. C. Hennis, who is now devoting his entire time to his other interests.

SALEM, Ohio.—D. G. Riley, who has been for the past year acting as superintendent for the Columbiana County Telephone Company, will be promoted to general manager for the company in the northern district of the county.

DENISON, Texas.—E. W. Goram has resigned as local manager for the Grayson County Telephone Company to take a position with the San Angelo Telephone Company. C. A. Shock, manager at Sherman, will in future look after the affairs of the company in both cities.

SWEETSERS, Ind.—Ralph Lake, who for three years has been manager of the Sweetsers Telephone Company, has resigned his position and will go to Ogden, Ind., where he becomes manager of the toll system for the telephone company of that city. Tilden Shandeley, of Converse, will succeed him in Sweetsers.

VEEDERSBURG, Ind.—J. L. Osborn, of the Veedersburg Telephone Company, Veedersburg, Ind., reports a most prosperous year for his company. Veedersburg is in the midst of so completely a developed territory that the Bell offers no competition. Mr. Osborn says that the Bell's agents have given up the idea of inducing them to connect with long distance toll lines.

ST. LOUIS, Mo.—B. H. Brooks, for the last three years chief engineer for the Columbus Citizens' Telephone Company, Columbus, Ohio, has accepted the position of chief engineer for the Electric Construction Company, of St. Louis. Mr. Brooks is now in Detroit taking charge of the construction and installation of the new plant of the Home Telephone Company in the interest of the Electric Construction Company, which has the contract for the work.

A. J. Kennedy, who has been with the Stromberg-Carlson Telephone Manufacturing Company for a number of years, in the engineering and later in the sales department, has associated himself with the Wire & Telephone Company of America at Rome, N. Y., as traveling representative of this company's sales department. Mr. Kennedy has a broad acquaintance in the telephone field, and will no doubt be no small factor in developing the sales of this company's already rapidly increasing business.

NEW COMPANIES.

BIPPUS, Ind.—The Bippus Telephone Company has been formed here.

GILLESPIE, Ill.—The Gillespie Telephone Company has been incorporated.

KILBOURNE, Ill.—The Anderson Telephone Company has been organized here.

LAFAYETTE, Tenn.—The Home Telephone Company has been organized here.

MCHENRY, N. D.—The Mutual Telephone Company has been organized here.

WESLEY, Iowa.—The Blake & Nelson Telephone Company has been incorporated.

COLBY, Kas.—The Halford and Colby Mutual Telephone Company has been incorporated here.

ARMOUR, S. D.—The Douglas and Charles Mix Union Telephone Company has been organized here.

CORY, Ind.—The Perry Telephone Company has been incorporated here, with a capital stock of $500.

SHELL, Wyo.—The Shell Telephone Company has been incorporated, with a capital stock of $1,500.

GLADWIN, Mich.—The Gladwin Telephone Company has been incorporated, with a capital stock of $15,000.

SYCAMORE, Ill.—The Farmers' Telephone Company has been incorporated with a capital stock of $5,000.

STUART, Neb.—The Interstate Telephone Company has been incorporated, with a capital stock of $100,000.

MILNOR, N. D.—The Milnor Rural Telephone Company has been incorporated, with a capital stock of $25,000.

SUMMERFIELD, Neb.—The Mutual Telephone Company has been incorporated here, with a capital stock of $1,000.

BROOKHAVEN, Miss.—The Topisaw Telephone Company with a capital stock of $2,000 has filed articles of incorporation.

MEQUON, Wis.—The Freistadt and Cedarburg Telephone Company has been incorporated, with a capital stock of $3,000.

HEMINGFORD, Neb.—The Hemingford Telephone Company has been incorporated. The company will erect a new exchange.

FIAT, Ohio.—The Fiat Telephone Company has been incorporated, with a capital stock of $5,000, by Peter Hahn and others.

MCLOUD, Okla.—The McLoud Telephone Company has been incorporated, with a capital stock of $15,000, by Scott Yates and others.

PLEASANT CITY, Ohio.—The Farmers' Telephone Company has been incorporated, by J. H. Larrick and others. Capital, $2,000.

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WILLIAMSBURG, Iowa.—A mutual telephone company has been organized here, with D. O. Jones, president, and U. S. Butler, secretary.

SHELDAHL, Iowa.—The Sheldahl Telephone Company has been incorporated, with a capital stock of $6,000, by A. Frick and others.

HAYES, S. D.—The Homestead Telephone Company has been incorporated here, by Dr. A. R. Beal, William A. Hopkins and J. D. Rainey.

SALEM, Mo.—The Barren Fork Telephone Company has organized to build a telephone line from Salem to Timber, a distance of 30 miles.

PLYMOUTH, Ind.—The Citizens' Mutual Telephone Company has been incorporated, with a capital stock of $50,000, with headquarters at Plymouth.

RAINSBORO, Ohio.—The Rainsboro Home Telephone Company has been incorporated with a capital stock of $10,000 by J. B. Upp and others.

DRESDEN, Tenn.—The Weakley County Rural Telephone Company has been organized here. The company's system will cover the entire county.

GREEN SULPHUR, W. Va.—The Green Sulphur Telephone Company has been organized, with a capital stock of $5,000, by G. W. Allen and others.

WILMINGTON, Ohio.—The Clinton County Telephone Company has been incorporated, with a capital stock of $125,000, by C. R. Fisher and others.

PULLMAN, Wash.—The Breeze-Burgan Telephone Company has been incorporated here, with a capital stock of $3,000 by S. E. Breeze and others.

CUMBERLAND, Ohio.—The Cumberland Farmers' Telephone Company has been incorporated, with a capital stock of $5,000, by J. M. Hunter and others.

FULTON, Ill.—The Fulton Telephone Company has been incorporated, with a capital of $500, by W. H. Durkee, Robert Ritchie and Garrett Naniga.

YAMPA, Colo.—The Yampa Telephone Company has been incorporated, with a capital stock of $10,000, by Arnold Powell, J. B. Male and A. C. Bower.

GALENA, Okla.—The Wild Cat Telephone Company has been incorporated, with a capital stock of $2,500, by John G. Corbin, M. S. English and F. Strong.

LANDIS STORE, Pa.—The Mountain Telephone Company of Berks, Montgomery and Lehigh counties has been incorporated with a capital stock of $5,000.

DWIGHT, Ill.—The Home Telephone Company has been incorporated here, with a capital stock of $1,500, by R. E. Bunting, John Hoffman and M. B. Butz.

BINGER, Okla.—The Sickles Telephone Company, of Binger, has been incorporated by E. H. Noble and J. Winteringer, of Binger, and L. E. Teter, of Lookeba.

KINGFISHER, Okla.—The Huntsville Telephone Company has been incorporated, with a capital stock of $2,700, by M. B. Gilliland, E. M. Hale and Joseph Thomas.

FERRYVILLE, Wis.—The Ferryville Telephone Company has been incorporated with a capital stock of $1,000 by I. B. Hayden, F. E. Rutter, D. L. Rutter and others.

CHATHAM, Ill.—The Union Telephone Company has been incorporated here with a capital stock of $35,000 by Fred W. Kelly, F. A. Bowdle and C. B. Cheadle.

GERMANIA, Wis.—The Shields Telephone Company has been incorporated, with a capital stock of $5,000, by C. E. Pierce, J. A. Schalow, G. W. Grahn and others.

CRAIG, Colo.—The Craig Mutual Telephone Company has been incorporated, with a capital stock of $10,000, by U. F. Harrison, J. J. Jones and J. C. Norvell.

WASHTA, Iowa.—A co-operative telephone company has been organized here, with the following officers: W. B. Chapman, president; F. L. Cooper, secretary.

CARTER, Okla.—The Rich Valley Telephone Company has been incorporated, with a capital stock of $10,000, by A. G. Melrose, E. Hughes and Walker Milum.

EVERMAN, Texas.—The Everman Telephone Company has been incorporated with a capital stock of $5,000 by J. Martin Scott, J. L. Gantt and Dr. J. A. Hammack.

CARMEN, Okla.—The Rich Valley Telephone Company, of Carmen, with a capital stock of $1,000, has been incorporated by F. R. Ford, A. Dunn and H. M. Hargrove.

DELTA, Ohio.—The Cass County Home Telephone Company has been incorporated; capital stock, $9,700; incorporators, M. W. Briggs and others.

MONTELLO, Wis.—The Montello Farmers' Telephone Company has been incorporated with a capital stock of $7,000 by John Foster and others.

EL PASO, Ill.—Pioneer Telephone Company has been incorporated with a capital stock of $1,000 by William Eft, Lewis C. Kindon and Charles C. Brown.

HYDRO, Okla.—The Deer Creek Telephone Company has been incorporated with a capital stock of $6,000 by Isa Smith, J. P. Jazen and Adam Kellerr.

HOYLETON, Ill.—The Rixman Telephone Company has been incorporated with a capital stock of $2,500 by H. W. Rixman, H. F. Rixman and F. D. Rixman.

AZLE, Tex.—The Azle Telephone Company has been incorporated with a capital stock of $2,000 by Joseph Fowler, J. W. Walker, H. N. Grigsby and others.

WEAVER, Tex.—The Weaver Telephone Company has been incorporated with a capital stock of $10,000 by J. N. Thomas, C T. Richardson and I. R. Thomas.

DUNLAP, Neb.—The Dunlap Telephone Company has been incorporated by William Blundell and others, all residents of Dawes county, with a capital of $2,500.

BOWDEN, N. D.—The Bowden Telephone Company has been incorporated with a capital stock of $2,500 by Almon D. Priest, George Seebach and Chris T. Anderson.

JOHNSON CREEK, Wis.—The Rock River Telephone Company has been incorporated with a capital stock of $10,000 by W. A. Christians, E. A. Seitz and others.

BLOOMINGTON, Ind.—The Farmers' Telephone Company has been incorporated with a capital stock of $2,000; directors, John Knight, Morton Payne and W. R. Smith.

KEWAUNEE, Wis.—The Montpelier Telephone Company has been incorporated with a capital stock of $1,008; incorporators, John Zitler, William Goetsch and others.

FARGO, Okla.—The Fargo-Harmon Telephone Company has applied for a charter. Capital, $1,500; incorporators, G. W. Bailey, W. R. Hill and C. A. Stromberg.

ELLETTSVILLE, Ind.—The Citizens' Telephone Company has been incorporated, with a capital stock of $2,500, by Fred I. Ownes, John A. Brown and Thomas Minet.

ROUND ROCK, Tex.—The Halley Telephone Route has been organized, with the following officers: W. N. Halley, president; Henry Palm, secretary and treasurer.

SANDWICH, Ill.—The Farmers' Telephone Company, of Sandwich, has been incorporated, with a capital sotck of $5,000, by J. C. Knight, F. J. Sleezer and O. H. Anderson.

BEAUFORT, N. C.—The Old North State Telephone Company has been chartered here, with a capital stock of $125,000, by D. P. Bible, J. W. Boon and Forrest W. Bible.

BLACKWELL, Okla.—The Bitter Creek Mutual Telephone Company has been incorporated, with a capital stock of $10,000, by W. P. and E. E. Carmichael and P. J. Haines.

HOOKER, Okla.—The Hooker Telephone Company has been incorporated, with a capital stock of $20,000, by N. O. Stephenson, G. T. Norbury, J. C. Beck and H. P. Fluhart.

SUMMERFIELD, Ill.—The North Grove Telephone Association has been incorporated, with a capital stock of $2,500, by George Leutinger, Samuel Baer and John Hirnstein.

VERMILION, Ill.—The Stratton Mutual Telephone Company has been incorporated here, with a capital stock of $2,500, by Charles Watson, B. M. Huffman and Owen J. Rowe.

RIPON, Wis.—The Ripon Rural Telephone Company has been incorporated, with a capital stock of $10,000, by J. B. Barlow, Jr., T. S. Chittenden, L. Lynch and others.

GRANT FORK, Ill.—The Grant Fork Mutual Telephone Company has been incorporated, with a capital stock of $2,400, by Julius Reinhart, John Schwartz and Harry Schrumpt.

FRANKFORT, Ky.—The Star Telephone Company, Star Limeworks, Lyon county, has been incorporated, with a capital stock of $800, by J. B. Smith, J. W. Stafford and J. R. Travis.

MISSOULA, Mont.—The People's Telephone Company has been incorporated here, with a capital stock of $1,000, by F. M. Taylor, R. D. Prescott, J. A. Moss and R. W. Hamilton.

WEST, Texas.—The Home Telephone Company has been incorporated with a capital stock of $25,000 by E. Rotan, A. F. Laulin, J. B. Earle, W. T. Glasgow and J. E. Boynton.

SULLIVAN, Ill.—The Sullivan Mutual Telephone and Telegraph Company has been incorporated, with a capital stock of $17,000, by C. E. Harsh, J. C. White and W. I. Sickafuss.

SUMMER SHADE, Ky.—The Summer Shade Telephone Company, of Metcalfe county, has been incorporated, with a capital of $250, by W. G. Depp, J. S. Bradley and A. B. Mayfield.

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Hugo, Minn.—The Centerville Rural Telephone Company has been incorporated, with a capital stock of $5,000. Lewis Patron and Philip J. Houle are among the incorporators.

Nashville, Ill.—The Washington County Mutual Telephone Company has been incorporated, with a capital sotck of $2,400, by Isaac Reidelberger, John R. Carson and M. L. Marker.

Conde, S. D.—The Conde Telephone Company has been incorporated, with a capital stock of $50,000, by A. Lewis, Ben R. Cowan, E. H. Smith, H. P. Hildebrand and Charles Conklin.

Mount Sterling, Ill.—The Mount Sterling Telephone Company has been incorporated, with a capital stock of $12,000, by Alexander H. Clark, Edwin Pendleton and Edward E. Clark.

Woodward, Okla.—The Indian Creek Telephone Company, of Woodward, has been incorporated with a capital stock of $5,000 by A. W. Green, Semar Mason and J. C. Steadman.

Briggsville, Wis.—The Briggsville and Big Springs Telephone Company has been incorporated, with a capital stock of $2,000, by F. J. Kimball, A. L. McDonald and W. C. Kimball.

Andes, N. Y.—The Andes and Bovine Telephone Company has been incorporated, with a capital stock of $480, by George Little, J. L. Strangeway, William J. Hyzer, Andes, and others.

Andes, N. Y.—The Gladstone Hollow Telephone Company has been incorporated with a capital stock of $352, by Elliott Graham, Reed Dumond, H. W. Frisbee, Andes, N. Y., and others.

Middletown, Minn.—The Middletown Farmers' Telephone Company has been incorporated, with a capital stock of $3,000, by T. D. Sawyer, George Withers and J. A. Sayles, of Jackson.

Stanley, Iowa.—A rural telephone company has been organized in Scott township, with the following officers: C. A. Pond, president; H. W. Bird, secretary; W. G. Lincoln, treasurer.

Pleasant City, Ohio.—The Pleasant City Farmers' Telephone Company has been incorporated, with a capital stock of $2,000, by J. H. Larrick, L. A. Gable, Grant Heskett and J. B. Reed.

Roachdale, Ind.—The Citizens' Telephone Company has been incorporated here, with a capital stock of $2,500. Directors: T. E. Tobin, G. W. Stewart, W. F. Davis, J. W. Miller and others.

Holden, Mo.—The Citizens' Mutual Telephone Company has been incorporated here, with a capital stock of $2,500, by M. C. Bell, G. G. Batsell, Brad Harmon, C. M. Irwin and L. F. Murray.

Caldwell, Kas.—The Farmers' Mutual O. K. Telephone Company has been incorporated with a capital stock of $1,400 by Thomas Adams, Jerry Lebeda, A. J. Cartwright and George Huffman.

Moreland, Ark.—A telephone company has been organized here with the following officers: U. Hudlow, president; R. H. Vaughn, vice-president; T. B. Ludwick, secretary; F. N. Duvall, treasurer.

Buffalo, Wyo.—The Klondike Telephone Company has been incorporated, with a capital stock of $1,000. Directors: J. Elmer Brock, Robert O. Watkins and G. E. A. Moeller, who is also president.

Brush Creek, Pa.—The Brush Creek Valley Telephone Company has been incorporated with a capital stock of $500 by H. W. Brenner, J. A. Auld, J. H. Guttersmith, Henry Wahl and others.

Longdale, Okla.—The Dane and Longdale Telephone Company, of Longdale, has been incorporated, with a capital stock of $1,000, by C. M. Richards, A. G. Brewer, C. E. Pearson and J. P. Sharp.

Great Bend, N. D.—The Great Bend Telephone Company has been incorporated, with a capital of $15,000, by Albert Bohn, R. W. Weiss, Frank Mitsel and George Werner, all of Great Bend.

Newton, Manitowoc County, Wis.—The English Lake Telephone Company has been incorporated, with a capital stock of $2,100, by Ernst Onsorge, Alex J. Duvenek, Herman Voght and Carl Jacob.

Ellsworth, Kas.—A new telephone company has been organized here, with the following officers: J. M. Reed, president; W. D. Sturgis, vice president; M. L. Amos, secretary; Robert Allan, treasurer.

Pond Creek, Okla.—The Grant County Rural Telephone Company has been incorporated, with a capital stock of $20,000, by L. E. Thom and E. E. McAllister, also W. F. Proctor and Walter Vansickle.

Wellsville, N. Y.—The Hanover Hill Mutual Telephone Company has been incorporated with a capital stock of $200 by Henry Hornburg, M. F. Vossler, Carl Schrader, Wellsville, N. Y., and others.

Saginaw, Mich.—The Valley Telephone Company has been reorganized and the company will resume dividend payments. A committee has been appointed to consider rebuilding of the Saginaw exchange.

Lawton, Okla.—The Farmers' Mutual Telephone Company, of Lawton, has been incorporated, with a capital of $5,000, by William G. Kennedy and R. R. Childers, of Tampa, and C. C. Naylor, of Lawton.

Olds, Iowa.—The Mutual Telephone Company has been incorporated with a capital stock of $14,000 by Everett Swanson, Thomas Schooley, Henry Ingmanson, Chris. Miller, Elmer Hooper and others.

Hillsboro, N. C.—The Cedar Grove-Elfland Telephone Company has been chartered in Orange county, with $1,000 capital. Joel F. Anderson, Cedar Grove, and Charles A. McDade, Hillsboro, are interested.

Armour, S. D.—The Farmers' Union Telephone Company has been incorporated, with a capital stock of $1,000, by W. S. Clark, C. O. Knapp, Andrew Bringelson, J. W. Hewitt and A. H. Ruck, all of Armour.

Spratt, Ohio.—The Muskingum County Farmers' Telephone Company has been incorporated, with a capital stock of $10,000, by H. J. Herron, J. T. Elliott, W. T. Blackstone, S. S. Neff and C. W. Elliott.

Fargo, Okla.—The Fargo Union Telephone Company, of Fargo, has been incorporated, with a capital stock of $5,000, by C. A. Stromberg, W. R. Hill and G. W. Railey, of Fargo, and E. E. Castiller, of Harmon.

Mankato, Minn.—The Le Seur Valley Telephone Company has been organized here, with the following officers: A. Burlison, president; Frank Pohl, vice-president; George Rivers, secretary; Martin Bowe, treasurer.

Nashville, Tenn.—The Home Telephone Company, of Nashville, has been incorporated with a capital stock of $1,000,000, by W. C. Polk, R. G. Cooper, H. M. Perry, George S. Parks, Luke Lea and Perkins Baxter.

Oceanside, Cal.—The San Luis Rey Co-operative Telephone Company has been incorporated. C. D. Libby, Oceanside, B. F. Libby, C. M. Hermens, D. Edmonds and F. W. Wackerman, of San Luis Rey are interested.

Lawton, Okla.—The Sulphur Springs Rural Telephone Company, of Comanche county, has been incorporated, with a capital stock of $1,000, by H. O. Miller, L. T. Dawes, F. H. Heasley, J. E. Trevor and S. D. Farquhar.

Zanesville, Ohio.—The Muckingum County Telephone Company has been incorporated with a capital stock of $10,000. The incorporation is a consolidation of the Spratt, Rix Mills and High Hill telephone systems.

Shirley, Okla.—The Shirley Rural Telephone Company has been incorporated, with a capital stock of $1,000, by John Brown, H. G. Taylor, Preston Martin and Charles Phoenix, of Shirley, and L. D. Jones, of Paul.

Lebanon, Ind.—The Big Spring Telephone Company has been incorporated, with a capital stock of $10,000, by Addison Higbee, Ellis Edwards, Benjamin Wheeler, J. O. Parr, F. M. Cobb, C. A. and T. P. Stark, directors.

Wichita Falls, Tex.—The Bowman and Lake Creed Telephone Company has been incorporated, with a capital stock of $5,000, by J. L. McCobkey, J. T. G. Cant, J. R. Decker, Henry Ford, J. U. Campbell and H. F. Simmons.

Clinton, Ohio.—The Clinton Telephone Company which when organized in 1899 was incorporated in the state of Delaware, has surrendered its charter there and last week incorporated under the laws of Ohio for $125,000.

Canistota, S. D.—The Farmers' Telephone Company, No. 2, has been incorporated, with the following officers: M. E. Mitchell, president; Samuel Morrow, vice-president; John Parsons, secretary; Charles Kostboth, treasurer.

Lewis, Ind.—The Lewis Telephone Company has been incorporated to operate in Vigo, Clay, Sullivan and Green counties; capital, $10,000. Directors: C. C. Givens, W. W. Woodron, C. W. Boston, J. N. Woods and A. H. Melch.

Mineral City, Ohio.—The Beggar's Run Telephone Company has been incorporated with a capital stock of $3,000 by A. L. Boyd, Thomas Herrod, Nicholas Fulk, Ira Dilley, E. S. Dilley, John Stahlecher, L. H. Farber and A. L. Strawn.

Lawton, Okla.—The Whisky Creek Telephone Company, of Walling's Store, Comanche county, has been incorporated, with a capital stock of $5,000, by C. M. Barnes, C. C. Hooper, Ed Owens, J. M. Hooper and J. D. Moore, of Hastings.

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LAKE BUTLER, Fla.—An Independent telephone company, with a capital stock of $1,200 has been organized here. The company will establish an exchange in this city and build lines to the neighboring towns. Col. Knight is one of the organizers.

SHATTUCK, Okla.—The Farmers' Mutual Rural Telephone Company, of Shattuck, has been incorporated, with a capital of $1,500, by T. J. Eldridge, William H. Holmes, L. L. Dunihoe, McHenry Smith, O. L. Edgker, S. M. Wallace and Charles T. Taylor.

BELLEFONTAINE, Ohio.—The warfare being carried on in Logan county between the Independents and Bell Company has resulted in the incorporation of the Logan County Farmers' Telephone Company, with a capital stock of $5,000, by W. J. Dachenbach and others.

ROCKWELL, Iowa.—The Rockwell Farmers' Mutual Telephone Company has been organized, with a capital stock of $3,000, and the following officers elected: J. H. Brown, president; D. Cahalan, vice-president; W. A. Storer, secretary; J. B. McGaheran, treasurer.

CEDARDALE, Okla.—The Estella, Cedardale and Quinlin Telephone Company, of Cedardale, has been incorporated, with a capital of $5,000, by Charles Johns and M. Smith, of Driscoll; Charles H. Shepard and H. C. Benefield, of Cedardale, and M. C. Kelly, of Estella.

LEW BEACH, N. Y.—The Union Grove and Beaverkill Telephone Company has been formed here, with the following officers: R. J. Hoag, president and secretary; A. J. Ackerly, vice president; A. J. Davidson, treasurer. Construction work will be commenced at once.

JEFFERSONVILLE, N. Y.—The Western Sullivan Telephone and Telegraph Company has been incorporated, with a capital stock of $25,000. Incorporators: Valentine Scheidel, Jeffersonville, N. Y.; Louis Bauernfeind, North Branch, N. Y.; Frank S. Anderson, Callicoon, N. Y.

DE RUYTER, N. Y.—The De Ruyter and Lincklaen Telephone Company, of De Ruyter, Madison county, has been incorporated, with a capital stock of $1,500. Directors: I. E. Smith, L. C. Wells and W. W. Ames, of De Ruyter, and J. F. Barstown and E. E. Poole, of Lincklaen.

PERIDA, Wis.—The Perida division of the Badger Mutual Telephone Company has been organized, with the following officers: John Hughes, manager; John Lien, secretary; Gilbert Lee, treasurer. It is proposed to build a line from Webster to Grantsburg, by way of Perida.

MONMOUTH, Iowa.—The Keystone-Monmouth Telephone Company has been incorporated, with a capital stock of $2,000, and the following officers elected for the ensuing year: D. B. Staggs, president; E. L. Barnes, vice-president; L. B. Stewart, secretary; B. R. Dye, treasurer.

ITHACA, N. Y.—The Cayuga Southern Telephone Company has been organized in this city, with a capital stock of $50,000, by R. B. Fegan, Samuel Jeffrey, L. H. Williams and G. W. Jeffrey, of Ithaca, and Isaac P. Hazard, Isaac Hazard, Jr., and Charles M. Hazard, of Poplar Ridge.

PAYNESVILLE, Minn.—The Zion Telephone Company has been incorporated, with a capital stock of $6,000, for the purpose of operating a rural line between Paynesville, Zion and Lake Henry. Fred C. Nehring, president; John A. Roach, vice-president; William Arndt, secretary; William Manz, treasurer.

BURLINGTON, Okla.—The North Union Telephone Company has been incorporated, with a capital stock of $10,500, by Henry Welch, T. Morgan, H. A. Ritter, William Mahoney and Frank Veach, all of Kiowa, Kas., and Joseph Fash, of Capron, and G. F. Keeler and H. B. Ames, of Drumm, Okla.

RENFREW, Pa.—A charter has been issued for the Burton Telephone Company, Renfrew, Butler county, capitalized at $5,000. Directors: William J. Burton, Joseph L. Campbell, L. S. Riley, Penn township, Butler county; Robert J. Marks, Middlesex township, Butler county; Thomas J. Shufflin, Butler.

WILLIAMSBURG, Ky.—The Williamsburg Home Telephone Company has been organized and a system will be installed within six months, according to the terms of the franchise. John Woodward is president, H. Woodward vice-president, and L. R. Benjamin secretary and treasurer. Capital stock, $10,000.

MARSHES, W. Va.—The Marshes Telephone Company has been organized for the purpose of constructing a telephone line from Marshes to Beckley and nearby towns. A first-class metallic line will be put in and a central office will be maintained at Marshes. John H. Proteet and Dr. G. P. Daniels are the chief promoters.

MAPLE FALLS, Wash.—The Maple Falls Telephone Company has been incorporated by John P. Ashlund, H. J. Strickfaden, D. M. Stewart. Officers: John P. Ashlund, president; F. D. Forbes, vice-president; D. M. Stewart, secretary; G. A. King, treasurer; Dr. J. C. Graffin, manager. The company will run a line to Mount Baker district, which will enable Bellingham to talk with the mines.

GASLYN, Wis.—The Gaslyn-Spooner Telephone Company has been incorporated, with a capital stock of $2,000, and the following officers elected: G. L. Miller, persident; Bruce Fleming, vice president; John Fondheller, secretary; J. D. Thomas, treasurer. The company will proceed at once to build a line from Gaslyn to Spooner, and will then connect lines to such other points as may seem desirable.

ELECTION OF OFFICERS.

SUMMIT CITY, Mich.—The Farmers' Mutual Telephone Company has elected officers. L. J. Tedman, president.

BLUE MOUND, Kans.—The Blue Mound Mutual Telephone Company has elected the following officers: L. Dixon, president; S. C. Spurlock; J. H. Davis, treasurer.

ACCOMAC, Va.—The Accomac and Northampton Telephone Company has elected the following officers: Frank Fletcher, president; John M. Bloxom, vice-president.

STENDAL, Ind.—The Stendal Home Telephone Company has elected the following officers for the ensuing year: Abner McAllister, president; Charles Katter, treasurer.

TEHERAN, Ill.—The Teheran Telephone Company has elected the following officers: Mr. Bonham, president; Mr. Aldrich, secretary and treasurer; F. V. Moslander, director.

SHERWOOD, Ohio.—The Mutual Telephone Company of this place has elected the following officers: President, Henry Huston; secretary, Chas. Coffin; treasurer, Geo. Kellermeier.

ROCK GROVE, Ill.—The Rock Grove Farmers' Mutual Telephone Company has elected the following officers: Lewis Rote, president; Wm. Fisher, secretary; Martin Brobst, treasurer.

MORA, Mo.—The Mora Telephone Company has elected the following officers for the ensuing year; John M. Moss, president; T. W. Goodknight, vice president; B. A. Dump, secretary; A. O'Farrell, treasurer.

CAPRON, Ill.—The Capron Telephone Company has elected Fred Cornwell and H. F. Olson directors for two years. The company will probably declare a semi-annual dividend of 4 per cent.

BELOIT, Wis.—The Farmers' Telephone Company has elected the following officers: George Gesley, president and manager; John Jones, vice-president; E. H. Skinner, secretary and treasurer.

LEESVILLE, Mo.—The Leesville Telephone Company has elected the following officers: Dr. T. W. Gray; president; Lee Ashley, vice-president; Hayes McLane, treasurer; J. B. Higdon, secretary.

BERWICK, Ohio.—The Farmers' Mutual Telephone Company has elected the following officers: P. J. Ramsower, president; Geo. C. Gase, vice-president; O. J. Motry, secretary; Frank Gase, treasurer.

ELIZABETH, Ind.—The Harrison County Telephone Company has elected the following officers: Philip J. Blonk, president; J. Zollman, vice-president; Erastus Smith, secretary; C. Treese, treasurer.

ANTWERP, Ohio.—The Antwerp Telephone Company has elected the following officers for the ensuing year: P. P. Doering, president; C. A. Lindemuth, vice-president; John H. Finley, secretary and treasurer.

SAVANNA, N. Y.—The Savannah Telephone Company has elected the following officers for the ensuing year: Edgar P. Brown, president; Perry Morgan, vice-president; C. A. Coleman, secretary-treasurer.

CORWITH, Iowa.—The Corwith Rural Telephone Company has elected the following officers: F. J. Oxley, president; John Palmer, vice-president; E. Lyell Stilson, treasurer; E. G. Gaskill, secretary and manager.

MIDDLETOWN, N. Y.—The Middletown Telephone Company has elected the following officers: Dr. M. C. Conner, president; Dr. Edwin Fancher, vice-president; W. C. Ramsdell, secretary; George B. Potter, treasurer.

SALITPA, Ala.—The stockholders of the new telephone company elected the following officers: T. L. Head, president; N. A. Molton, vice president; C. T. McCorquodale, secretary; D. J. W. Fleming, treasurer.

ALTONA, Ill.—The Fort Sumpter Telephone Company has elected the following officers for the ensuing year: C. J. McMaster, president; D. E. Johnson, vice-president; Peter McKissock, secretary and treasurer.

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NATOMA, Kans.—The Natoma Central Telephone Company has elected the following officers: A. C. Daggett, president; T. C. Snodgrass, vice-president; S. E. White, secretary. The capital stock of the company is $25,000.

DUDLEY, Iowa.—The Dudley and Munterville Mutual Telephone Company has elected the following officers for the ensuing year: D. W. Baker, president; Charles E. Enderson, treasurer; Henry Burnstedt, secretary.

BONDVILLE, Ill.—The Bondville Telephone Company has elected the following officers for the ensuing year: W. H. Scott, president; O. T. Bell, vice-president; P. M. Jacobs, treasurer; O. W. Norton, secretary; G. L. Siefken, manager.

OWATONNA, Minn.—The Steel County Telephone Company has elected the following officers: A. A. Peterson, president; George A. Peterson, secretary; S. A. Rask, treasurer. The company will add more telephones to its system in a short time.

EDGERTON, Minn.—The Enterprise Telephone Company has elected the following officers for the ensuing year: C. S. Howard, Edgerton, president; R. B. Hinkly, Luverne, vice-president; L. W. Lockwood, Pipestone, secretary; F. E. Douty, Edgerton, treasurer.

HAVANA, Ohio.—The Independent Telephone Company, recently organized at Havana, has elected the following officers for the ensuing year: W. E. Clymer, president; E. Moos, vice-president; G. G. Van Horn, secretary; R. C. Niver, treasurer and manager.

ROCHESTER, N. Y.—The directors of the United States Independent Telephone Company have elected the following officers: T. W. Finucane, president; Lee Bonoist and Joseph J. Heim, vice-presidents; John M. Rauber and John C. Woodbury, secretary and treasurer.

WINTHROP, Minn.—The People's Independent Telephone Company has elected the following officers: Henry Witte, president; C. M. Peterson, vice-president; C. A. Benson, treasurer; J. A. Larson, secretary and manager. The company will make numerous extensions.

EMERSON, Iowa.—The Emerson Mutual Telephone Company has been making improvements in its plant and has elected the following officers for the ensuing year: C. T. Reid, president; Wilbur Adams, vice-president; A. D. Sowers, secretary; E. C. Collins, treasurer.

WATERVILLE, N. Y.—The Waterville Telephone Company has elected the following officers: I. D. Brainerd, president; S. S. Bissell, vice-president; H. M. King, secretary; Parks Terry, treasurer and general manager. The directors have declared a dividend of 6 per cent.

CARLETON, Mich.—The People's Telephone Company of Wayne and Monroe counties has elected the following officers: Joseph Waltz, president; E. O. Maxwell, vice president; F. L. Edwards, secretary and treasurer. The company will add about 200 new telephones to its system in a short time.

MANKATO, Minn.—The Mankato Citizens' Telephone Company has elected the following officers for the ensuing year: H. A. Patterson, president; Nic Peterson, vice-president; W. D. Willare, secretary and treasurer. The usual semi-annual dividend of 4 per cent was declared at the same meeting.

MANDEN, N. D.—The Manden Telephone Company has elected the following officers for the ensuing year: C. E. V. Draper, president; T. A. Cummins, vice president; G. B. Furness, secretary; Joseph P. Hess, treasurer. The annual report shows that the company is in a very prosperous condition.

WINSLOW, Ariz.—The Northern Arizona Telephone Company has elected the following directors: W. H. Clark, of Holbrook; J. E. Richards, Capt. Henry Warren, Sr., Joseph and G. R. Bauerbach and J. A. Lyons, of Winslow. The company contemplates some improvements and extensions in its system.

WINCHESTER, Va.—At the annual meeting of the Frederick and Clark Telephone Company, H. C. Warden, of Berryville, was elected vice-president and general manager, succeeding, in the latter capacity, H. F. Byrd, whose resignation as general manager was accepted. Mr. Byrd remains secretary of the company.

KARLSBORG, Wis.—The Burnett County Telephone Company has elected the following officers for the ensuing year: Isaac Lindquist, president; L. McKee, vice-president; Chas. E. Johnson, secretary; F. L. Peterson, treasurer. The company has a balance on hand of about $200 with which to make necessary improvements.

ALMA, Mich.—At the annual meeting of the Union Telephone Company, the following officers were elected for the ensuing year: T. Kincaid, president, Owosso; James P. Gibbs, vice-president, Ithaca; L. L. Conn, secretary, Alma; G. S. Ward, treasurer, Alma. The annual report showed the company to be in an exceedingly prosperous condition, and extensive improvements are contemplated for this year.

FRANCHISES AND TRANSFERS.

NORTH YAKIMA, Wash.—The Cowichee Telephone Company has petitioned for a franchise in this town.

MT. ETNA, Ind.—The Majenica Telephone Company has made application at this place for a franchise.

TONGANOXIE, Kans.—The Tonganoxie telephone exchange has been sold to F. B. McKinnon, of Lawrence.

ALDEN, Iowa.—Geo. Stringer and W. E. Trousdale have been granted a telephone franchise in this town.

ASHLAND, Ohio.—The Star Telephone Company has asked for a renewal of franchise for twenty-five years.

SIDNEY, Iowa.—The City Telephone Company of Sidney is seeking a franchise for a telephone system here.

OREGON CITY, Ore.—The city council has granted the Home Telephone Company an additional franchise to operate in this city.

BASCOM, Ohio.—The Bascom Farmers' Mutual Telephone Company has been granted a franchise to operate in Hopewell township.

CRETE, Neb.—The Independent Telephone Company of Lincoln, Frank Woods, manager, has been granted a franchise in this town.

DOWNEY, Cal.—The Downey Home Telephone Company has been granted a franchise to operate in Downey, Norwalk and Los Nictos.

WEST LIBERTY, Iowa.—N. S. Mellick, of this city, has purchased the West Liberty Telephone Company. The consideration was $12,000.

GREENFIELD, Ind.—The Hannah-Jackson Telephone Company's plant, with franchises and fixtures, was sold last week to Chas. H. Hannah, for $2,000.

OLD FORT, Ohio.—The Home Telephone Company of Gibsonburg has sold the plant here to the Old Fort Mutual Telephone Company; consideration, $3,200.

FORT SENECA, Ohio.—The Fort Seneca Farmers' Mutual Telephone Company, which has a system surrounding this place, has been granted a franchise here.

EAGLE BEND, Minn.—W. E. Hutchinson has secured a franchise for a telephone exchange in this town. He has a year's time in which to build the exchange.

LAPORTE, Ind.—J. Vene Dorland of this city has bought the telephone exchange at Wanatah. Mr. Dorland contemplates a number of extensions and improvements.

ARKADELPHIA, Ark.—Fricby & Thrasher, of Malvern, have purchased the Arkadelphia telephone exchange from H. Runyan, of Amity. They also own the Malvern system.

COUNCIL BLUFFS, Iowa.—The Independent Telephone Company has secured a franchise in Underwood and will commence work on the installation of the exchange at once.

MILLSTADT, Ill.—The Millstadt Telephone Company has sold to the St. Clair County Farmers' Mutual Telephone Company its switchboard, poles, wires and system in Millstadt.

FOSTORIA, Ohio.—The county commissioners have granted a franchise to the Farmers' Mutual Telephone Company to use the roads in Hopewell and Seneca townships for poles and wires.

AUBURN, Neb.—After the mayor's veto of its franchise, the Auburn Telephone Company tendered a new one which met all the mayor's objections and which was passed at its first reading.

KNIGHTSTOWN, Ind.—R. L. Harrison has sold his local interests to the Knightstown Telephone Company, an Independent concern, which leaves the company without competition in this town.

HOPE, Ind.—O. W. Bowman, of the Hope Independent Telephone Company, has purchased Simon Nading's interest in the plant and business, and now Mr. Bowman is sole owner of the system.

CALIFORNIA, Pa.—The Union Telephone Company has purchased the equipment of the Federal Telephone Company, at Roscoe, and the lines are now being connected with the system at California.

MAHNOMEN, Minn.—A 30-year franchise has been granted to L. G. and C. H. Sanders to operate a telephone exchange in the village of Mahnomen. They expect to have the line in operation within 90 days.

MAYFIELD, Ky.—Dr. William Mason has purchased the property and franchise of the Independent Telephone Company and will make such needed improvements as are necessary to put the lines in good condition.

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LANSING, Mich.—The Citizens' Telephone Company has asked for certain changes in its franchise, in consideration of which it will improve its service in Lansing by the installation of an automatic exchange.

WAUPACA, Wis.—The Rural Telephone Company, recently organized for the purpose of keeping up the telephone connection between this city and Pine River, has bought the Wolf River company's lines, recently purchased by the Messrs. Frisbie and Ham at receiver's sale.

PULLMAN, Wash.—The Barbee-Fletcher telephone line, which was recently sold to S. H. Breeze, has been consolidated with the Burgan-Hungate line. The line will be known as the Breeze-Burgan Telephone Company.

WINNFIELD, La.—The Winn-Parish Telephone Company has been granted a franchise to put in another telephone exchange at this place. The company at present owns only rural lines, but will put in an exchange within the next two weeks.

HENDERSON, Ky.—The city council has passed an ordinance providing for the sale of a third telephone franchise in this city at a price of $300. The franchise is to be bought by the Home Telephone Company, in order that extensions and improvements may be made.

WESTMORELAND, Tenn.—The Sumner County Home Telephone Company, with a capital stock of $10,000, has made application for a charter. The company succeeds the Westmoreland Telephone Company. Incorporators: C. W. Caldwell, W. L. Wilder, P. C. Anglea, S. W. Brown, F. L. Link and Bascom Simmons.

RICHLAND CENTER, Wis.—The Farmers' Telephone Company has purchased the lines and exchanges of the Union Telephone Company in Richland county, including the large exchange in this city. The deal was closed by L. W. Burch, general manager of the Union company, and consists of several hundred miles of wire.

CHEHALIS, Wash.—At a meeting of the Lewis County Commissioners, recently, the Home Telephone Company, which is connected with the Northwestern Long Distance Telephone Company, made application for a 25-year franchise to operate through this county. At the Chehalis city council meeting, the same company made an application for a franchise for 25 years.

CLINTON, Mo.—Arrangements have been made whereby the Missouri Union Telephone Company absorbs the Mutual United Telephone Company. This deal makes the Missouri Union one of the most formidable Independent telephone companies in the state and gives it complete control of Henry County. Ed. Willoughby has been elected president, to fill the vacancy caused by Mr. J. D. Livingston's resignation.

FORT WORTH, Tex.—A deed has been filed from A. J. Brown and George W. Riddle of Dallas, Tex., to A. C. Jobes of Wichita, Kans., the consideration being $15,000, which conveys the long-distance toll line of the Texas Consolidated Long-Distance Telephone Company, between Fort Worth and Dallas, with stations and property other than the telephone lines, at Dallas, Grand Prairie, Arlington, Handley and Fort Worth.

FINANCIAL.

LILY, Ky.—The Lily Telephone Company has increased its capital stock from $6,000 to $12,000.

SPEED, Mo.—The Speed Telephone Company has increased its capital stock from $6,050 to $10,000.

MONROE, Mich.—The Ida Telephone Company has increased its capital stock from $5,000 to $10,000.

MOORETON, N. D.—The Farmers' Telephone Company has been authorized to issue bonds for $2,000.

RIPON, Wis.—The Ripon Telephone Company has increased its capital stock from $4,000 to $12,000.

BARNESTON, Neb.—The Barneston Mutual Telephone Company has increased its capital stock to $7,000.

AMHERST, Wis.—The Amherst Telephone Company has increased its capital stock from $2,500 to $6,000.

ROCKWOOD, Ill.—The Ebenezer Telephone Company will increase its capital stock to make improvements.

MILLSTADT, Ill.—The West Side Telephone Company has increased its capital stock from $1,140 to $2,700.

BUCYRUS, Ohio.—The Bucyrus Telephone Company has increased its capital stock from $60,000 to $100,000.

DAVIS, Ill.—The People's Mutual Telephone Company has increased its capital stock from $10,000 to $15,000.

FOOTVILLE, Wis.—The Footville Telephone Company has increased its capital stock from $10,000 to $15,000.

OCONOMOWOC, Wis.—The Badger Telephone Company has increased its capital stock from $5,000 to $25,000.

MCKINNEY, Tex.—The McKinney Telephone Company has increased its capital stock from $30,000 to $40,000.

FILLEY, Neb.—The Home Independent Telephone Company has increased its capital stock from $3,000 to $9,000.

BURLINGTON, Ohio.—The Burlington Telephone Company has increased its capital stock from $300 to $3,000.

WALWORTH, Wis.—The Walworth Telephone Exchange Company has increased its capital stock from $4,200 to $7,200.

BELLEVUE, Ohio.—The Bellevue Home Telephone Company has increased its capital stock from $10,000 to $100,000.

DONGOLA, Ill.—The Dongola Home Mutual Telephone Company has increased its capital stock from $3,000 to $5,000.

WINDOM, Kas.—The Windom Telephone Company has increased its capital stock to $5,000, and will extend its lines.

WAUSEON, Ohio.—The Northwestern Ohio Telephone Company has increased its capital stock from $40,000 to $65,000.

MASCOUTAH, Ill.—The Lookingglass Prairie Telephone Company has increased its capital stock from $10,000 to $20,000.

RUTLAND, Ill.—The Central Illinois Independent Telephone Company has increased its capital stock from $30,000 to $75,000.

HAMILTON, Ohio.—The Hamilton Home Telephone Company has declared its eighth quarterly dividend on preferred stock.

HARTINGTON, Neb.—At the annual meeting of the Cedar County Telephone Company, a dividend of 8 per cent was ordered.

PLEASANT SPRINGS, Wis.—The Kegonsa Independent Telephone Company has increased its capital stock from $1,000 to $3,000.

MASON CITY, Ill.—The Mason City Telephone and Telegraph Company has increased its capital stock from $2,500 to $7,500.

MAJENICA, Ind.—The Majenica Telephone Company has filed a notice of capital stock to $60,000, the increase being $35,000.

HARTINGTON, Neb.—At the annual meeting of the Cedar County Telephone Company, a dividend of 8 per cent was ordered.

WINTHROP, Minn.—The People's Independent Telephone Company has increased its capital stock to $50,000. C. M. Peterson, president.

WAUKON, Iowa.—The Standard Telephone Company will issue $50,000 worth of 6 per cent bonds, for making improvements in the system.

MCKINNEY, Tex.—The D. C. Telephone Company of Collin county has filed an amendment to its charter increasing its capital stock from $10,000 to $20,000.

FORT WAYNE, Ind.—About $2,000 worth of Monroeville telephone bonds were sold in Fort Wayne last week by brokers at par and accumulated interest.

GOSHEN, N. Y.—The stockholders of the Warwick Valley Telephone Company have subscribed for all of the new issue of the company's stock, amounting to $10,000.

GRAND RAPIDS, Mich.—At the regular meeting of the directors of the Citizens' Telephone Company, the thirty-ninth consecutive dividend of 2 per cent was declared.

MOBILE, Ala.—The Home Telephone Company of Mobile has increased its capital stock from $330,000 to $500,000 in common stock, and from $20,000 to $150,000 in preferred stock.

LANSING, Iowa.—The Standard Telephone Company is making preparations to cross the Mississippi river at this point with another set of wires to accommodate its increasing business.

THREE RIVERS, Mich.—The Three Rivers Telephone Company has increased its capital stock from $50,000 to $100,000. The company will make extensive improvements in its system.

THURSTON, Ohio.—The directors of the Buckeye Lake Home Telephone Company met and passed a resolution recommending that the capital stock of the company be increased from $10,000 to $30,000.

KANSAS CITY, Mo.—The directors of the Kansas City Home Telephone Company have increased the regular quarterly dividend from 1¼ to 1½ per cent, thus placing it on a basis of 6 per cent per annum.

PHILADELPHIA, Pa.—The Keystone Telephone Company showed a gain in the net for February of $10,622 over the preceding February. A part of this is due to the acquisition of the Eastern Telephone Company of Camden, N. J.

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HIGHLAND, N. Y.—The Highland Telephone Company has increased its capital stock from $40,000 to $75,000 and elected the following officers: Henry Greenfield, president; J. H. Hunter, vice-president; B. C. Durland, treasurer; F. H. Florence, secretary.

DAYTON, Ohio.—At a recent meeting of the stockholders of the Dayton Home Telephone Company, the plans of the directors for the extension and improvement of the company's lines. The capital stock was increased from $1,000,000 to $2,000,000.

GRAND MEADOW, Minn.—The Home Telephone Company has declared a dividend of six per cent payable May 1st. The company now has $10,000 invested in its property and the affairs are in a prosperous condition.

CLEVELAND, Ohio.—At the annual meeting of the United States and Cuyahoga telephone companies, the regular quarterly dividends were declared. These were ¾ per cent on United States common and 1½ per cent on the preferred, and 1 per cent on Cuyahoga common and 1½ per cent on the preferred.

NEW CONSTRUCTION AND EXTENSION.

HIBBING, Minn.—The Hibbing Telephone Company will build new lines.

PORTAGE, Wis.—The Portage Telephone Company is making extensions.

ARBUCKLE, Pa.—The Arbuckle Telephone Company is extending its lines.

FREDONIA, N. Y.—The Home Telephone Company will extend its lines.

BYRON, Ill.—The Byron Telephone Company is installing a new switchboard.

MODDERSVILLE, Mich.—The Citizens' Telephone Company will build a line to Leota.

SEBEKA, Minn.—The Sebeka Telephone Company will construct many new lines.

BERTRAND, Neb.—The Bertrand Telephone Company will install a new switchboard.

HALLOCK, Minn.—The Kittson Telephone Company will extend its lines this spring.

SALEM, Iowa.—The Salem Telephone Company will make extensions and improvements.

GREENVIEW, Ill.—B. F. Marbold is constructing a new telephone line northeast of town.

JOHNSTOWN, Wis.—The Rock County Telephone Company is extending its lines to Richmond.

ELKHART, Ind.—The Home Telephone Company will make many improvements in its plant.

OVERTON, Neb.—The Independent Telephone Company will make improvements in its system.

WING, Ill.—The Pleasant Ridge Telephone Company has decided to put in a new switchboard.

MADELIA, Minn.—The Madelia Telephone Company will soon begin the construction of new lines.

THORP, Wis.—The Thorp Telephone Company will erect a new line from Thorp to Roosevelt.

DEXTER, Mich.—The Washtenaw Home Telephone Company is building lines in and about Dexter.

CANTON, Ill.—The Canton, Sugarville and Fairview Telephone Company is rebuilding its lines.

ANACORTES, Wash.—The Farmers' Mutual Telephone Company is planning many improvements.

WAMSLEY, Ohio.—The Blue Creek Telephone Company is extending its lines to Mineral Springs.

JAY, Ind.—The Farmers' Telephone Company is at work on the construction of its new system.

LORAIN, Ohio.—The Black River Telephone Company will extend its lines all over Lorain county.

EAST ENTERPRISE, Ind.—The Farmers' Mutual Telephone Company will install a new switchboard.

DAYTON, Ohio.—The Home Telephone Company has set aside $200,000 for improvements and extensions.

NAPOLEON, N. D.—The Napoleon Telephone Company is extending its lines to Hazleton and Braddock.

ADAIR, Iowa.—The Farmers' Mutual Telephone Company will enlarge and improve the local exchange.

MADISON, Minn.—The Madison Telephone Company is building thirty additional miles of telephone lines.

NORTHFIELD, Minn.—The Northfield Telephone Company will string many new lines in this city and vicinity.

MOUNT VERNON, Maine.—The Mount Vernon Telephone Company will extend and improve its system.

SPRINGFIELD, Ohio.—The Home Telephone Company is building its line to connect Brandt and Sulphur Grove.

MONROE, Wash.—The Independent Telephone Company is planning to extend its lines from Monroe to Novelty.

NEW LONDON, Wis.—The Matteson Telephone Company will extend its lines to Symco and to Leeman this spring.

DES MOINES, Iowa.—The Mutual Telephone Company is erecting a new exchange building, at a cost of $9,000.

ATKINSON, Wis.—The Jefferson County Telephone Company will immediately put in about 4,000 feet of new cable.

GREAT BEND, Kas.—The Arkansas Valley Telephone Company is building a toll line from this place to Syracuse.

GRAFTON, W. Va.—The Consolidated Telephone Company expects to spend about $8,000 in enlarging its equipment.

BIRDSBORO, Pa.—The Conestoga Telephone and Telegraph Company will build a line from Georgetown to Birdsboro.

ELSMORE, Kas.—The Mutual Telephone Company will establish an exchange here and install a switchboard at once.

MAYSVILLE, W. Va.—The lines of the Mutual Telephone Company are to be extended from Maysville to Petersburg.

SHEFFIELD, Iowa.—The Mutual Telephone Company contemplates many improvements and extensions in its system.

EUREKA, Ill.—The Eureka Telephone Company is preparing to make extensive improvements to its plant this spring.

CASTLEDALE, Utah.—The Eastern Utah Telephone Company is preparing to install a local telephone system in this town.

OXFORD, Mich.—The Oakland County Telephone Company is contemplating many improvements and extensions in its system.

LITCHFIELD, Ill.—The People's Mutual Telephone Company of this city is installing a metallic long distance line to Bennett.

MARQUETTE, Wis.—The Marquette Telephone Company is planning to put in a new switchboard and make other improvements.

FARGO, N. D.—The North Dakota Independent Telephone Company is progressing very rapidly with the extension of its system.

GRAND DETOUR, Ill.—The Pine Creek Telephone Company has installed a new metallic circuit in the village of Grand Detour.

HOMESTEAD, Kas.—The Rural Telephone Company has decided to extend its line to Burns and the material has been ordered.

BATEMAN, Mich.—The Bateman Telephone Company is pushing its line to Riga, where its new central wire will be installed.

CASSELTON, N. D.—The North Dakota Independent Telephone Company will make improvements at this place during the spring and summer.

OZONA, Tex.—It is the intention of Garrett Bean and E. Miller to construct a modern telephone line between Ozona and Sheffield.

PARAGOULD, Ark.—The Senath Telephone Company has completed its line from this place to Cardwell. It is proposed to make further extensions.

BIG SPRINGS, Tex.—The Western Telephone Company, of this city, is now engaged in constructing a telephone line from Big Springs to Merkel.

PHILADELPHIA, Pa.—The York Telephone Company will run long distance lines through the southern counties of the state between Philadelphia and Pittsburg.

VERNON, Kas.—The Barry County Telephone Company contemplates the construction of new lines to Cassville, Purdy, Verona, Scholten, Cato and other points.

SCHENECTADY, N. Y.—During the past month, at an expenditure of about $5,000, the Home Telephone Company has installed a new system in its central office.

WINCHESTER, Ind.—The Eastern Indiana Telephone Company has completed a copper line to Celina, Ohio, where it will connect with the United States Telephone Company.

BOISE, Idaho.—The Independent Telephone Company is extending its system and is putting in a large amount of material at Nampa, Caldwell, Payette, Weiser and Emmett.

MONROE, Mich.—The Stoddard-Osgood Telephone Company, with headquarters in this city, is rapidly extending its line into Detroit, and at the present time is already beyond Newport.

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DAYTON, Ohio.—The Home Telephone Company has set aside $200,000 for the purpose of increasing the company's cable mileage, which, owing to the increase in subscribers, has become inadequate.

SALINA, Kas.—Arrangements have been made between the Salina and New Gottland telephone companies for the construction of a direct line between Lindsborg and New Gottland, 14 miles.

ANGOLA, Ind.—The Steuben County Electric Telephone Company is now installing another swtchboard at the Angola office. It is also rebuilding and will run a metallic toll line from this place to Metz.

GARDEN CITY, Kas.—Manager E. E. Wade of the Garden City Light, Telephone & Manufacturing Company announces that his company will expend about $30,000 in the betterment of its telephone service.

ARLINGTON, Neb.—The Arlington Telephone Company expects to improve its lines in many ways this spring. Within the city limits the wires will be placed in cables, and all country lines will be metallic.

BELLEVUE, Iowa.—Manager Schlatter of the Bellevue Telephone Company announces that the company has appropriated $3,000 for improvements this year. A new 300-drop switchboard will be installed.

ARCANUM, Ohio.—The Home Telephone Company's exchange will be moved and new furniture and fixtures will be installed, and new 300-drop switchboard will be installed to replace the one recently damaged by fire.

ST. JAMES, Minn.—The St. James Telephone Company, which was organized last year by business men, built seventy miles of rural lines last season, and thirty miles more are projected for the coming season.

PONTIAC, Mich.—The system of the Oakland Telephone Company will undergo a complete remodeling which will amount practically to the installation of an entire new plant. The company will also build a new exchange office.

LISBON, Ohio.—The United States Telephone Company is arranging to give much better service on the long distance lines out of Lisbon. The lines will be rebuilt and those now constructed of iron will be replaced by copper.

LA CYGNE, Kas.—The plans and arrangements for the Commercial telephone line have been completed and the work of setting the poles has already begun. The new line will connect with the Farmers' Mutual exchange at this place.

HIGH POINT, N. C.—The North State Telephone Company is making numerous improvements, including cables, etc. The company claims to have made 30 per cent last year over its expenses, having charged a considerably less rate than its competitor.

YOUNGSTOWN, Ohio.—The United States Telephone Company, the Independent long distance company here, is making extensive improvements in its lines. The company is now rebuilding its line to Steubenville, and will also run two more direct lines to Cleveland.

PORTLAND, Ore.—The Deschutes Telephone Company recently purchased the Deschutes Irrigation and Power Company's private telephone line along the ditches, and intends to rebuild and extend this line into a rural system. Extensions of new lines are also being made.

COEUR D'ALENE, Idaho.—The Interstate Telephone Company is improving its exchange and service at this place at an expense of about $30,000. J. W. Fisher, general manager, says: "We will institute as near to a model telephone service as possible and will not spare money to make our system the best in the city."

DES MOINES, Iowa.—R. A. Walker, manager of the Mutual Telephone Company, of Des Moines, has just completed plans for the expenditure of about $75,000 in improvements in the company's local system. The improvements will begin in a few days, and some of the work will probably not be completed before fall.

OZONA, Tex.—Through connection was made recently on the Ozona-El Dorado Telephone Line, and the citizens of the two towns are able to communicate. The Ozona-Sheffield line is rapidly being constructed, and when finished will give Ozona direct telephone connection with all the towns in this section of the state.

PERTH AMBOY, N. J.—The Hudson & Middlesex Telephone & Telegraph Company has perfected arrangements with the Coast Line Telephone Company for the reconstruction of its system in Perth Amboy and surrounding cities and villages. Work has already been begun. The Coast Line company is interested in the local company to the extent of $200,000.

ELY, Nev.—The White Pine Telephone Company, which owns the only telephone system in this portion of the state, will immediately begin improving the system, at an expense of $50,000. The company will extend its lines to the new mining camps in the vicinity of Ely, and before the system is completed will have every camp in White Pine county connected with Ely.

ABERDEEN, Wash.—President Edward Finch, of the Independent Telephone Company, who some six months ago obtained a franchise from the city for his new system, said that the company would commence work on its lines immediately and that the line would be in working order in the course of a few months. For the present the system will be installed only in Aberdeen, Hoquiam and Cosmopolis.

FOREIGN.

AUSTRALIA.—The Australian government will reduce the tolls and improve the service on the telephone system, which is a public utility conducted in connection with the postoffice.

BANGKOK, Siam.—The Siamese minister of public works will install an entirely up-to-date central energy battery telephone system in Bangkok. The installation will go to public tender.

TAIREN, Kwantung, Manchuria.—The Twantung government general intends to construct a long-distance telephone line from Yingkow to Mukden and construction will be started in April.

TORREON, Mex.—The telephone line between Torreon and Matamoros has been completed and a first-class local exchange has been installed in this city. The line is owned by J. Woessner, who owns the system in Torreon, which bears his name.

MEXICO CITY, Mex.—The plant of the New Telephone Company will soon be completed and in working order. K. W. Petterson, chief engineer of the company, who was to have left the city for his home in Stockholm, Sweden, on April 1, has postponed his trip until May 1, as he is desirous of completing all the work at the headquarters of the company before leaving the republic. The plant has cost $2,000,000.

MONTEVIDEO, Uruguay.—The Uruguayan government has empowered the Usina Electrica of Montevideo to draw up proposals and estimates for the installation of an underground telephone system to serve 5,000 subscribers, which it is intended to lay down in that capital. This concern has also been authorized by the government to acquire in Europe the necessary underground cable, which will cost about $88,000. The government has also authorized the purchase of $79,500 worth of wire and overhead cables.

MISCELLANEOUS.

BLAIR, Neb.—The Blair Telephone Company will soon erect a new exchange building.

LEWIS, Kas.—The Farmers' Telephone Exchange was recently destroyed by fire.

MORGANVILLE, Kas.—The Farmers' Home Telephone Company has changed its name to the Swedish Telephone Company. P. F. Peterson, president.

CLINTON, Ohio.—The Clinton Telephone Company has purchased a site for a new exchange building.

URBANA, Ohio.—The Urbana Telephone Company has purchased a site for a new exchange building.

PLEASANTVILLE, Ind.—The telephone exchange in this town has been completely destroyed by fire. Loss, $2,000.

MT. PULASKI, Ill.—The Mt. Pulaski Telephone Company has just completed a handsome new brick building for its exchange.

DAZEY, N. D.—The Central North Dakota Telephone Company has re-elected its old directors and manager. The company has a surplus of $1,500 besides an 8 per cent dividend.

COLUMBIA, Tenn.—The wires of the Home Long-Distance Telephone Company were recently brought into Columbia from Birmingham and were cut into the office of the Citizens' Telephone Company in this county.

MENOMINEE, Mich.—Manager Henry Tideman of the Menominee Electric Company, has closed an important deal by which the Davis Electric Company of St. Louis will be moved to Menominee and become a part of the plant of the Menominee Electric Company.

LEAVENWORTH, Kas.—The entire plant of the Home Telephone Company at this place has been destroyed by fire. President W. T. Hewitt stated that loss could be safely estimated at $30,000. No attempt will be made to repair the old plant, but work will be rushed on a new one.

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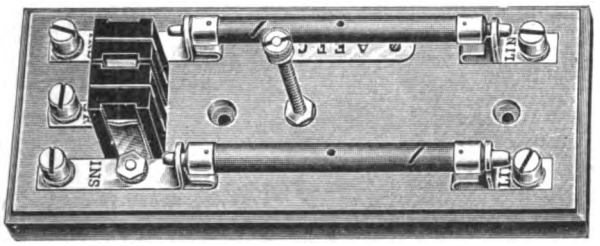

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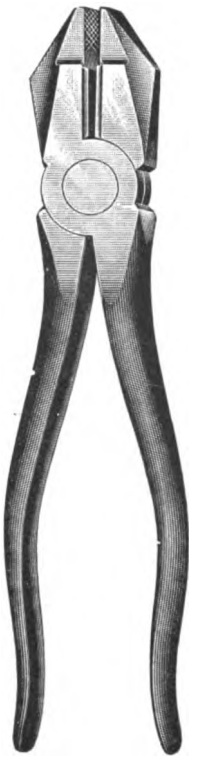

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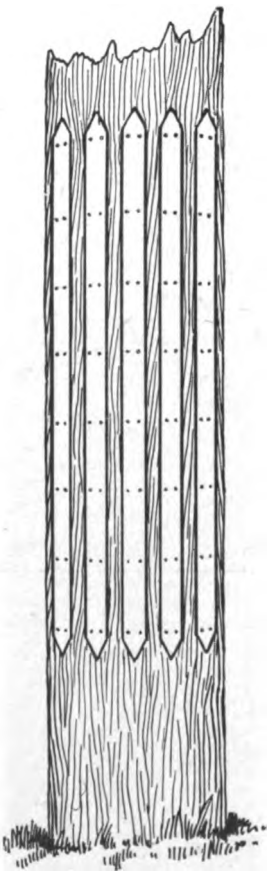

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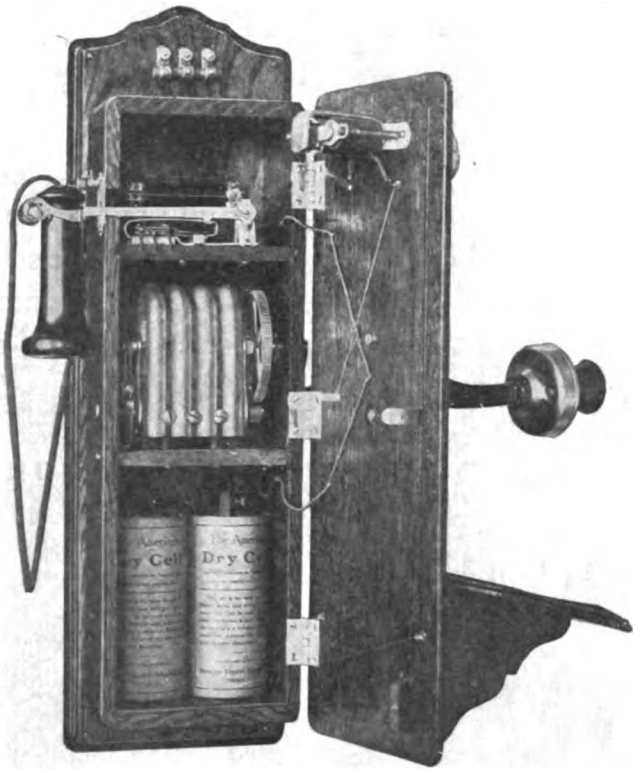

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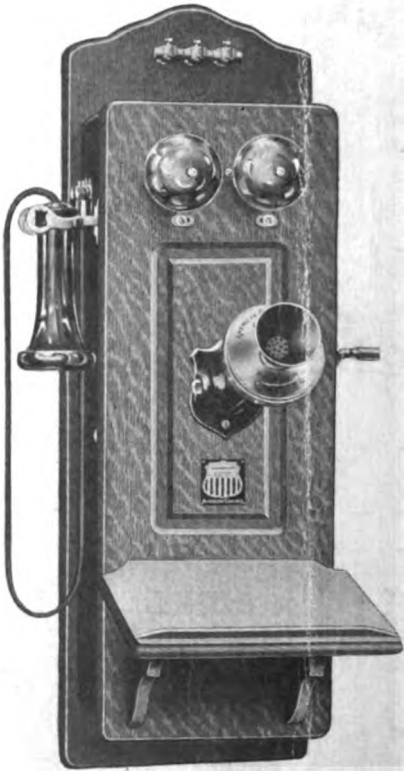

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